

No. 417

A BY-LAW

FOR

Regulating the Erection
and to Provide for
the Safety of
Buildings

Passed Aug-1, 1912
repeated 30 of Nov. 1917

CONTENTS

BY-LAW NO. 417.

- A By-Law to Regulate the Construction, Alteration, Repair, Removal and Inspection of Buildings and to Prevent Accidents by Fire within the City of Edmonton.

PART I.

Department of the Inspection of Buildings.

Sec.		Page.
1.	Department of the Inspection of Buildings	1

PART II.

New Buildings to Conform to By-Law.

2.	New Buildings to Conform to By-Law	1
3.	Alterations to Buildings to Conform to By-Law....	2
4.	Filing Plans and Statements. Time Limit for Permits. Ordinary Repairs. By-Law Applies to Municipal and Private Buildings. Approval or Rejection of Plans	2
5.	Demolishing Buildings	4
5a.	Temporary Occupation of Streets	5

PART III.

Definitions.

6.	Measurement of Height for Buildings and Walls for the Purposes of this By-Law	7
7.	Measurement for Width and Length of Buildings for the Purposes of this By-Law	8
8.	Private Dwelling, Definition of	8
9.	Apartment House, Definition of	9
11.	Lodging House, Definition of	9
12.	Hotel, Definition of	9
13.	Office Building Definition of	10
14.	Frame Building, Definition of	10

PART IV.

Quality of Materials

15.	Brick. Sand	11
16.	Lime Mortar. Cement Mortar. Cements and Lime Mortar	11
17.	Cements	12
18.	Concrete	13

Sec.		Page
19.	Quality of Timber	13
20.	Tests of New Materials	13
21.	Structural Material	13

PART V.

Excavations and Foundations.

22.	Excavations. Adjoining Walls	14
23.	Bearing Capacity of Soil	16
24.	Pressure under Footings of Foundations	17
25.	Foundations. Wood Piles. Concrete Piles. Metal in Foundations	18
26.	Foundation Walls. Base Course. Stepped Up Foot- ings. Inverted Arches. Grillage in Foundations. Headers in Stone Walls	20

PART VI.

Walls and Partitions.

27.	Materials of Walls	22
28.	Walls and Piers. Bearing Walls Defined. Bearing Walls with Openings. Brick and Masonry Work. Piers. Stone Posts Under Interior Columns. Head- ing Course in Brick Walls. Ashlar	22
29.	Mortar for Walls and Ashlar	25
30.	Limiting the Height of Buildings	25
31.	Walls for Dwelling House Class. Partition Walls. Iron Columns and Girders Instead of Partition Walls. Clear Span Thicknesses	26
32.	Walls for Warehouse Class. Clear Span Thickness. Walls for Public Buildings	29
33.	Partition Walls or Girders and Columns. Floor Areas in Stores, Warehouses, Factories, and Other Buildings. Recapitulation of Limit of Floor Area.	31
34.	Increased Thickness of Walls for Buildings More Than One Hundred and Five Feet in Depth. Re- duced Thickness for Interior Walls	36
35.	Height of Storeys. Meaning of Storeys. Meaning of Basement and Cellar	37
36.	Enclosure Walls for Skeleton Structures. Reduced Thickness for Adjoining Walls	38
37.	Curtain Walls	39
38.	Existing Party Walls	39
39.	Lining Existing Walls	39
40.	Walls of Unfinished Buildings	40
41.	Walls Tied, Anchored and Braced. Walls to be Braced	40
42.	Arches and Lintels. Masonry Arches	41
43.	Parapet Walls	42
44.	Hollow Walls	42
45.	Hollow Bricks on Inside of Walls	43
46.	Recesses and Chases in Walls. Recesses for Al- coves. Chases for Pipes. Aggregate Area for Re- cesses and Chases	43
47.	Furred Walls	44

Sec.		Page.
48.	Light and Vent Shafts. One-Storey Vent Shafts in Private Dwellings	44
49.	Brick and Hollow Tile Partitions	45
50.	Cellar Partitions in Residence Buildings of not less than \$8,000 in value	45
51.	Main Stud Partitions	46
52.	Timber in Walls Prohibited	46

PART VII.

Apartment Houses, Lodging Houses and Hotels.

53.	Apartment Houses. Cellar Stairs. Closet prohibited under first storey staircase. Percentage of Lot Occupied. Yards. Courts. Outer Courts. Inner Court. Outer and Inner Courts. Rear Apartment Houses. Buildings on Same Lot with Apartment Houses. Rooms, Lighting and Ventilation of Windows in Rooms. Windows in Water Closet Compartments and Bath Rooms. Rooms, Size of. Alcoves. Public Hallways. Stair Hallway Windows. Privacy. Existing Buildings. Lights in Public Hallways. Skylights. Chimneys or Fireplaces. Area for Vent Shafts. Bottoms of Shafts, Areas and Yards. Basement and Cellars. Water Closet Accommodations. Storage of Dangerous Materials. Dangerous Businesses. Fire Escapes.	47
-----	---	----

PART VIII.

Vaults, Areaways and Cellars.

54.	Cellars to be Connected with Sewers	60
55.	Vaults Under Sidewalks	61
56.	Vault Roofs	61
57.	Cellar Floors	61
58.	Cellar Ceilings	61
59.	Wood Beams. Minimum Thickness for Wood Beams. Trimmer and Header Beams and Tail Beams. Stirrup Irons. Bearings for Wood Beams. Bevel Ends for Wood Beams. Ends of Beams Not to Rest on Stud Partitions. Cross Bridging for Beams. Beams Near Flues. To Calculate Safe Distributed Load on Wood.—Floor Beams	62
60.	Anchor and Straps for Wood Beams and Girders. Girder Straps and Anchors. Beam Straps	64
61.	Wood Columns and Plates	65
62.	Timber for Trusses. Bolts and Washers for Timber Work	66
63.	Mill Construction, Definition of	66

PART X.

Chimneys, Flues, Fireplaces and Heating Pipes.

64.	Trimmer Arches	67
65.	Chimneys, Flues and Fireplaces. Chimney Flues to be Lined with Pipe. Flues to be Left Clean	68

Sec.		Page.
66.	Chimney Supports	70
67.	Chimneys of Cupolas	71
68.	Hot Air Flues, Pipes and Vent Ducts. Smoke Pipes Through Roofs. Hot Air Pipes in Walls. Hot Air Pipes in Closets. Horizontal Hot Air Pipes. Ducts for Ventilation. Vent Ducts in Public Schools	71
69.	Steam and Hot Water Heating Pipes. Plumbing Pipes	74

PART XI.

General Construction.

70.	Ducts for Pipes	74
71.	Studded-Off Spaces	75
72.	Forbidding Use Wood for, in Certain Buildings. Attic or Cock Lofts in Peaked Roofs	75
73.	Bay, Oriel and Show Windows	76

PART XII.

Stairs and Entrances.

74.	Entrance to Basement or Cellar	76
75.	Stairs, Number Regulated by Area of Building	77
76.	Engineers' Stationary Ladders	78
77.	Slate and Stone Treads of Stairs to be Supported....	78

PART XIII.

Skylights and Floor-Lights.

78.	Metal Skylights. Skylights Over Public Passage- ways. Floor-Lights	79
79.	Unprotected Openings in Floors and Roofs	80

PART XIV.

Enclosure and Shed Covering for the Protection of Pedes- trians.—Protection of Persons Employed in Building.

80.	Shed Coverings. Outside Scaffolds. Window Open- ings Enclosed. Protection of Adjoining Skylight and Roofs. Sheds and Enclosures Subject to In- spection. When Adjoining Owner Refuses Perm- ission to Protect Roofs and Skylights. Building In- spector May Serve Notice. Building Inspector Empowered to Erect Enclosure and Protection....	80
81.	Protection of Persons Employed on Buildings	82

PART XV.

Miscellaneous Buildings.

82.	Grain Elevators and Coal Pockets. Ice Houses	83
83.	Exhibition Buildings	84
84.	Garages. Smoke Houses	84

PART XVI.

Heating Apparatus, Drying Rooms, Gas and Water Pipes.

Sec.	Page.
85. Heating Boilers and Furnaces	85
86. Registers	87
87. Drying Rooms	88
88. Ranges and Stoves	88
89. Notice as to Heating Apparatus	89
90. Gas and Water Pipes. Rules and Regulations for Installation of Gas Pipes. Gas Brackets	89

PART XVII.

Roofs, Leaders, Cornices, Bulkheads, Scuttles and Tanks.

91. Mansard Roofs	91
92. Cornices and Gutters. Walls in Relation to Roof Planking and Cornices. Unsafe Cornices. Cor- nices Damaged by Fire	91
93. Bulkheads on Roofs and Scuttles	92
94. Tanks	93
95. Roofing and Leaders Within the Fire Limits. Lead- ers from Roofs	93

PART XVIII.

Elevators, Hoistways and Dumb-Waiters. Stair Hall Enclosures.

96. Elevators and Hoistways	94
97. Elevator Enclosures. Skylights Over Elevator En- closures. Bottom of Elevator Shafts. Enclosing Elevator-Operating Machinery	95
98. Dumb-Waiter Shafts. Skylight Over Dumb-Waiter Shaft. Door in Dumb-Waiter Shafts. Bottom and Top of Dumb-Waiter Shafts	96
99. Elevators in Existing Hotels	98
100. Screen Under Elevator Sheaves	98
101. Inspection, Installation, Alteration and Operation of Elevators	98
102. Stairs, Hallway Enclosures	99

PART XIX.

Fire Appliances, Fire Escapes and Fire-Proof Shutters and Doors.

103. Standpipes. Sprinkler Pipes in Basements and Cel- lars of Mercantile Manufacturing Buildings	100
104. Fire Escapes. Balconies. Floors of Balconies. Rail- ings. Stairways. Brackets. Drop-Ladders. Paint- ing. Incumbrances on Fire Escapes. Notice Plates on Fire Escape Balconies. Scuttle Ladders. Bulk- heads of Stairs and Doors	104
105. Fireproof Shutters and Doors. Metal Window Frames and Sash and Wired Glass. Shutters Ar- ranged to be Opened from the Outside. Rolling	

Sec.		Page.
	Metal Shutters. Interior Wall Openings to Have Fireproof Doors. Outside and Inside Fireproof Shutters and Doors to be Closed at Night	109

PART XX.

Fireproof Buildings.

106.	Fireproof Buildings. Hall and Permanent Partitions.	111
107.	Fireproof Floor Fillings Between Beams. Hollow Tile Arches of Burnt Clay or Terra-Cotta. Various Fillings Between Floor Beams. Protection Against Injury by Freezing. Centreing. Strength for Fireproof Floor Fillings. Pipe Openings Through Fireproof Floors. Roof Domes	114
108.	Encasing Interior Columns. Encasing Exposed Sides and Bottom and Top Plates and Flanges of Girders and Beams. Encasing Interior Columns and Girders in Non-Fireproof Buildings	119

PART XXI.

Iron and Steel Construction.

109.	Skeleton-Constructed Buildings	121
110.	Reinforced Concrete Construction. Reinforced Concrete Definition. Requirements for Drawing. Reinforced Concrete Unit Stresses. Designs for Slabs, Beams and Girders. Limiting Width of Flange in Tee Beams. Web Stresses. Square and Rectangular Slabs. Flat Slab Type of Construction. Reinforced Concrete Columns. Spiral Reinforced Columns. Structural Steel Columns Encased in Concrete. Columns Splices. Curtain Walls in Skeleton Construction Buildings. Minimum Thickness of Slabs. Fireproofing. System. Proportion for Mixing Reinforced Concrete. Cement, Sand and Inerts. Neat Cement. Sand. Aggregate. Steel in Concrete. Placing Concrete and Steel. Freezing Weather. Centreing and Forms. Inspection and Tests. Concrete Block Construction. Test of Concrete Blocks. Requirements and Condition of Approval. Revocal of License	122
111.	Steel and Wrought Iron Columns	140
112.	Cast-Iron Columns	142
113.	Double Columns	144
114.	Party Wall Posts	145
115.	Steel and Iron Girders	145
116.	Rolled Steel and Wrought Iron Beams Used as Girders	146
117.	Cast Iron Lintels	146
118.	Plates Under Ends of Lintels and Girders	146
119.	Rolled Steel and Wrought Iron Floor and Roof Beams	147
120.	Templates Under Ends of Steel or Iron Floor Beams.	147

Sec.	Page.
121. Framing and Connecting Structural Work	148
122. Riveting of Structural Steel and Wrought Iron Work	148
123. Bolting of Structural Steel and Wrought Iron Work	149
124. Steel and Wrought Iron Trusses	149
125. Riveted Steel and Wrought Iron Trusses	150
126. Steel and Iron Pin-Connected Trusses	150
127. Iron and Other Metal Fronts to be Filled In	151
128. Painting of Metal Structural Work	152

PART XXII.

Floor Loads—Temporary Supports.

129. Floor Loads. Vertical Supports. Reduction in Live Loads on Columns	152
130. Loads on Floors to be Distributed	154
131. Strength of Existing Floors to be Calculated. Expense for Examining Into Strength of Floors. Floor Calculations Filled with Application to Build	154
132. Strength of Temporary Supports	156

PART XXIII.

Calculations, Strength of Materials.

133. Safe Load for Masonry Work. Rubble-Stone Work. Concrete	157
134. Weight of Certain Materials	158
135. Computations for Strength of Materials	159
136. Factors of Safety	159
137. Strength of Columns. Columns Eccentrically Loaded.	159
138. Working Stresses. Compression (direct). Tension (direct). Shear. Safe Extreme Fibre Stress (bending)	162
139. Wind Pressure	164

PART XXIV.

Public Buildings, Theatres and Places of Assemblage.

140. Public Buildings. Theatres Existing Prior to the Passage of This Ordinance	165
141. Theatres and Places of Public Amusement. When Straight Stairs Return Directly on Themselves.	166
142. Rules and Regulations Governing the Storage and Handling of Nitro-Cellulose Films in Connection With Motion Picture Film Exchanges. Moving Picture Machines. Description of Building. Other Occupancies of Building. Diagram	184

PART XXV.

Building Raised, Lowered, Altered or Moved. Existing Buildings.

143. Building Raised, Lowered, Altered or Moved	189
144. Existing Buildings	190

PART XXVI.**Fire Limits.**

Sec.	Page.
145. Fire Limits	191

PART XXVII.**Frame Buildings.**

146. Frame Buildings. Temporary Frame Buildings. Sheds. Fences. Signs	194
147. Frame Buildings Outside of First Fire Limits. Height for Frame Buildings. Area for Frame Buildings. Footings for Frame Buildings. Foundations for Frame Buildings. Walls of Frame Buildings. Frame Construction. Fire Stops. Plumbing, Drainage and Heating of Frame Buildings. Frame Buildings Altered. Occupancy by More Than Six Families. Veneered Buildings. Brick Buildings Outside of Fire Limits	196
148. Frame Buildings Where Streets Are Not Established	200

PART XXVIII.**Unsafe Buildings.**

149. Unsafe Buildings. Surveys. Court Proceedings....	201
150. Surveys on Unsafe Buildings. Surveyors. Pay of Architect, Civil Engineer or Builder on Survey....	201
151. Applications for Order to Remove Violations and to Vacate Buildings	203

PART XXIX.**Recovery of Bodies Under Fallen Buildings. Buildings in Danger of Falling.**

152. Recovery of Bodies Under Fallen Buildings. Buildings in Danger of Falling. Stoppage of Work on Buildings. Buildings in Immediate Danger of Falling. To Perform Humane Work	205
---	-----

PART XXX.**Stoppage of Work on Buildings.**

153. Stoppage of Work on Buildings	206
--	-----

PART XXXI.**Seal, Badges, Uniforms—Officers of Department of Buildings—Officers of Fire Department May Enter Buildings.**

154. Seal. Badges. Uniforms. Officers of Department of Buildings May Enter Buildings and Premises..	206
155. Officers of Fire Department—Right to Enter Buildings, etc., for Purposes of Examination	207

PART XXXII.

Existing Suits and Liabilities—Invalidity of One Section Not to Invalidate Another.

Sec.	Page
156. Existing Suits and Liabilities	208
157. Invalidity of One Section Not to Invalidate Any Other	209

PART XXXIII.

Regulations for Certain Businesses.

158. Lumber and Wood Yards	209
159. Slaughter Houses and Manufactories	209
160. Moving Buildings	209
161. Stables	211

PART XXXIV.

An Ordinance Governing the Storage and Sale of Gasoline, Benzine, etc., in the City of Edmonton, Alta.

162. Tanks. Pipes. Vent. Pumps. Regulations	214
---	-----

PART XXXV.

Plumbing and Drainage.

163. General Conditions Governing	217
---	-----

PART XXXVI.

Penalties.

164. Penalties. Vault Areas, Shipping, Unloading, etc.	
Repeal. Date of Enforcement	233
By-Law No. 444. Amending By-Law No. 417	236



BY-LAW No. 417

A By-Law to Regulate the Construction, Alteration, Repair, Removal and Inspection of Buildings and to Prevent Accidents by Fire Within the City of Edmonton.

THE Municipal Council of the City of Edmonton, duly assembled, enacts as follows:

SECTION 1.

Department of the Inspection of Buildings.

1. There shall be in the City of Edmonton a department to be called "The Department of the Inspection of Buildings," which shall be charged with the enforcement of the provisions of this by-law, the survey and inspection of buildings, and the protection of the same against fire and accident.

2. The staff of said Department shall consist of a chief, to be known as the "Inspector of Buildings," and as many assistant inspectors as may be found necessary from time to time.

(1) In all future appointments the Inspector shall be an architect or a practical builder of experience in the construction of buildings. Assistants shall be men of experience and experts in building construction in its several branches.

(2) Neither the Inspector nor any Assistant Inspector shall be employed or engaged in any other business or be interested in any work for buildings or for furnishing of materials.

SECTION 2.

No wall structure, building or part thereof shall hereafter be built or constructed, nor shall plumbing, drainage, piping or wiring of any building, structure, or premises be constructed or altered in the City of Edmonton, except in conformity with the provisions of this By-Law.

New buildings
to conform to
by-law

SECTION 3.

Alterations to
buildings to
conform to
by-law

No buildings already erected, or hereafter to be built in said City shall be raised, altered, moved or built in any manner, that would be in violation of any of the provisions of this By-Law or the approval issued thereunder.

SECTION 4.

Filing Plans and Statements.

Preliminary
requirements

1. Before the erection, construction or alteration of any building or part of any building, structure, or part of any structure or wall, or any platform, staging or flooring to be used for standing or seating purposes, and before the construction or alteration of the plumbing, drainage, piping or wiring of any building, structure or premises is commenced.

Persons
authorized
to act

2. The owner or lessee or agent of either, or the architect or builder employed by such owner or lessee in connection with the proposed erection or alteration;

Detailed
statements

3. Shall submit to the Inspector of Buildings: A detailed statement in duplicate of the specifications on appropriate blanks to be furnished to applicants by the Inspector of Buildings.

Plans

4. And a full and complete copy of the plans of such proposed work.

Detail
drawings

5. And such structural detail drawings of said proposed work as the Inspectors of Buildings may require.

Name and
residence of
owners to be
given

6. All of which shall be accompanied with a statement in writing giving the full name of residence, street and number of owner or owners, architect and builder, also the exact location of the proposed building, structure or proposed structure, premises, wall, platform, staging or flooring, or if a corporation, the name and business address of said corporation, determined by lot and block number and the name of the subdivision.

Water rates
paid before
permit is
granted

7. When the application for permission is filed by the owner, or his agent, architect, or builder, he shall be-

fore the permit is granted him, furnish the Inspector of Buildings a certificate on form supplied by the Inspector, showing the quantity of concrete, brickwork, stonework and plastering in the said building, and the said owner or his agent, architect or builder shall pay to the Inspector of Buildings, acting as agent for the Waterworks Department of the City of Edmonton, such sums as computed by the charges then in vogue for the water necessary to carry on the proposed work before the required building permit shall be issued.

8. Such statement may be made by the Agent or Architect or Builder of the person or persons hereinbefore required to make the same.

Agent or architect may make statement

9. Said statement and detailed statement of specifications and copy of the plans shall be kept on file in the office of the Inspector of Buildings.

Statements and plans to be kept on file

10. And the erection or alteration of said building, structure, wall, platform, staging or flooring, or any part thereof, shall not be commenced or proceeded with until said statement and plans have been so filed, and a permit issued by the Inspector of Buildings.

Work not to be commenced until statements and plans are approved

11. Nothing in this section shall be construed to prevent the Inspector of Buildings from granting his approval for the erection of any part of a building or any part of a building or any part of a structure, where plans and detailed statements of said building or structure have been submitted.

Approval of a portion of statements and plans

Time Limit for Permits.

12. Any approval which may be issued by the Inspector of Buildings pursuant to the provisions of this section, but under which no work is commenced within three months from the time of issuance, shall expire by limitation.

Three months if work is not commenced

Ordinary Repairs.

13. Ordinary repairs of buildings or structures may be made without notice of the Inspector of Buildings, but such repairs shall not be construed to include the cutting away of any masonry walls, or any portion thereof, the removal or cutting of any beams or sup-

No permit necessary therefor

ports, or the removal, change or closing of any staircase, or cutting or changing of any electric or telephone wire.

By-Law Applies to Municipal and Private Buildings.

With equal
force

14. The foregoing provisions and all the provisions of this By-Law shall apply with equal force to buildings, both municipal and private.

Approval or Rejection of Plans.

Within a
reasonable
time

15. It shall be the duty of the Inspector of Buildings to approve or reject any plans filed with him pursuant to the provisions of this section within three working days.

SECTION 5.

Demolishing Buildings.

An existing
building to be
stated

1. When plans and detailed statements are filed with the Inspector of Buildings for the erection of a new building, if an existing building or part of an existing building is to be demolished, such fact shall be stated in the statement so filed.

Method of
demolishing

2. In demolishing any building, storey after storey, commencing with the top storey shall be completely removed, no material shall be placed upon the floor of any such building in the course of demolition, but the brick, timbers and other structural parts of each storey shall be lowered to the ground immediately upon displacement.

Sprinkled

3. The material to be removed shall be properly wet down to lay the dust incident to its removal.

Notice to be
given of
intended
demolition

4. The owner, architect, builder or contractor for any building, structure, premises, wall, platform, staging or flooring to be demolished shall give not less than twenty-four hours' notice to the Inspector of Buildings of such intended demolition.

Inspection
previous to
lathing

5. Whenever any building is ready to lath, the owner, contractor or other person in charge of the work shall notify the Inspector in writing of such fact, giv-

ing the number of the building permit under which the work is performed, and it shall be the duty of the Inspector within three calendar working days after receiving such notice to inspect the building and ascertain whether or not fire stops, bridging, chimneys, fireplaces and other parts, have been constructed in accordance with the provisions of this By-Law, and no lathing shall be done in such building within three calendar working days after the giving of the notice above provided for, unless the building has been previously inspected and approved by the Inspector on the form of approval provided.

SECTION 5A.

Temporary Occupation of Streets.

1. During the excavation for and the erection of the external walls in any building, except as may be provided for, within five (5) feet of any lane or street line, the owner, contractor, or agent in charge thereof shall cause the part of such building site fronting on such street or lane to be closed by a fence not less than five (5) feet from the building line, and not more than eight (8) feet nor less than six (6) feet high. Such fence shall be erected before the excavation is commenced, and no portion of such fence shall be used for advertising purposes.

Fencing in
building sites

2. A charge of 2 cents per square foot per month shall be levied for the portion of the street or sidewalk from the building line used during building operations, such amount to be paid in advance.

Sidewalk
around fence

3. Where buildings to be erected or altered front on business thoroughfare and in congested business districts, the Commissioners may require that sidewalk traffic be maintained without interruption by means of covered sidewalk. If any enclosing fence shall prevent passage on the sidewalk, the owner, contractor or agent in charge thereof shall cause to be laid and maintained in good repair and free of any obstructions, a temporary plank sidewalk around same not less than one-third the width of the sidewalk, but never less than five (5) feet wide.

Limits of
Sidewalk

4. Wherever there are no vaults to be built under sidewalk or light areas placed in sidewalk, the fence mentioned in previous section shall be kept within two-thirds of the width of the sidewalk, except when a plank walk is permitted the fence may be placed on the curb line with temporary walk outside of curb not less than five (5) feet wide. Such temporary sidewalk shall, if there are excavations on either side of same, be protected by substantial railing, which railing shall be built and maintained so long as such excavations continue to exist. Nothing in this section shall prohibit the maintenance of a driveway over such walk for the delivery of materials, provided that sidewalk is properly protected.

Covered
sidewalks

5. If a building to be erected in the congested business district is more than two storeys in height and is set at or near the street line there shall be built over the temporary sidewalk a roof having a framework covered with two layers of two-inch plank. Said roof shall not be less than eight (8) feet above any walk and extended to the curb and be maintained as long as material is being used or handled on said street front above the level of such sidewalk covering. Temporary enclosures of store fronts during their construction or repairs may extend over the sidewalk not more than six feet, subject to all the regulations hereinbefore prescribed.

Method of
protection
to be used

6. Before a permit to build is granted the method of protection and enclosure of the building site as prescribed in the previous sections and the placing and working of building materials upon public property shall be determined upon, and if any change of method in whole or in part is necessary during the conduct of building operations such change shall be ordered by the Inspector of Buildings under the direction of the Commissioners of the City of Edmonton.

Excavated
materials

7. Earth taken from excavations and rubbish taken from buildings being altered, erected or demolished shall not be stored upon sidewalk, street or lane, but must be removed from day to day as rapidly as produced where any rubbish liable to produce dust is being handled, it must be kept wetted down to prevent its being blown about by the wind. Building rubbish and useless material accumulating on

the upper floors shall be lowered in receptacles by elevator or closed chutes directly into waggons or covered receptacles provided by owner or contractor for same.

8. No building materials shall be worked, such as dressing stone, lumber, or other material upon any public property within the business district or first fire limits, or in any district where the streets are boulevarded shall any street or portion thereof be occupied or inclosed so as to injure any trees, shrubbery or boulevards. Working materials

9. Any person erecting a building adjacent to a permanent walk boulevard or roadway must, when taking out a permit for such building, deposit with the Building Inspector a sum equal to the value of such walk or boulevard in front of the proposed building, also where he or they require a portion of the roadway, a further sum equal to the value of the roadway intended to be used. Both walk pavement and boulevard will be replaced by the City out of the money deposited by the contractor, any sum remaining after the work is complete, will be returned to the contractor. Restoration of sidewalks, Boulevards and roadways

10. The owner, or owners, contractor, or agents of any premises where anything in violation of any of the preceding sections of this By-Law, or any person who may be employed or may assist or take part in the commission of any such violation or who shall violate any of the conditions of the permits issued shall, for each and every violation be subject to the penalties provided for elsewhere in this By-Law. Penalty for violation

PART III.

Definitions, Section 6.

Measurement of Height for Buildings and Walls for the Purposes of this By-Law.

1. The height of buildings shall be measured: From the curb level of the centre of the front of the building to the top of the highest point of the roof beams in the case of the flat roofs. Points to complete height
For flat roof buildings

2. And for high pitched roofs the average of the height of the gable shall be taken as the highest point of the building. For high pitched roof buildings

Blocking up on
level roof
beams

3. In the case of flat roofs the measurement for height shall not preclude placing the roof beams level at the ceiling line and blocking up above the beams to get a proper pitch for water on the roofing.

For wall on
girders

4. In case a wall is carried on iron or steel girders, or iron or steel girders or columns, or piers of masonry, the measurements, as to height for the wall, may be taken from the top of such girder.

For walls of
buildings
which do not
adjoin street

5. When the walls of a structure do not adjoin street, then the average level for the ground adjoining the walls may be taken instead of the street curb level for the height of such structure.

SECTION 7.

Measurement for Width and Depth of Buildings For the Purposes of this By-Law.

Length

1. The greatest horizontal dimensions of any building shall be considered its length.

Width

2. And the next greatest horizontal dimensions its width.

SECTION 8.

Private Dwelling—Definition of.

Residence of
not more than
two families

1. A private dwelling shall be taken to mean and include every building, which shall be intended, or designed for, or used as the home or residence of not more than two separate and distinct families or households.

Percentage of
lot occupied

2. Any such building hereafter erected shall not cover more than ninety per cent. of the lot area.

3. The part of any private dwelling or other building intended to be used as a home for one or more families of two or more persons each, shall not be built or placed a greater distance than thirty (30) feet from the nearest line of the street.

SECTION 9.

Apartment House—Definition of.

1. An apartment house shall be taken to mean, and include every building, which shall be intended or designed for or used as the home or residence of three or more families or households living independently of each other, and in which every such family or household shall have provided for it a suite of not less than three rooms in addition to a toilet room containing a set bath tub, water closet and lavatory basin.

Buildings occupied by three or more families

2. Any such building hereafter erected shall not cover any greater percentage of a lot than is specified in Section 53 of this By-Law.

Percentage of lot occupied

3. Any such buildings hereafter erected shall comply with the requirements for light and ventilation, as is specified in Section 53 of this By-Law.

Light and ventilation

SECTION 11.

Lodging-House—Definition of.

1. A lodging-house shall be taken to mean and include every house or building or portion thereof for hire, in which persons are harboured or lodged for a single night or for less than a week at any one time, or any part of which is let for any person to sleep in for any term less than a week.

Buildings in which persons are lodged by the day or week

2. Any such building hereafter erected shall not cover any greater percentage of a lot than is lawful for a hotel as specified in Section 12 of this By-Law.

Percentage of lot occupied

SECTION 12.

Hotel—Definition of.

1. A hotel shall be taken to mean and include every building or part thereof, intended, designed, or used for supplying food and shelter to residents or guests, and having a general public dining room or a cafe, or both, and containing also more than fifteen sleeping rooms above the first storey.

Buildings supplying food and shelter to persons

Number of rooms

Apartment
Hotel.
Definition of

2. An apartment hotel shall be taken to mean, and include every hotel in which the apartments are rented, or are intended or designed to be rented in suites, and for terms not less than one month, and in which there are no kitchens, dining or serving rooms within the apartments, but where a common dining room is provided for the use of the tenants.

Percentage of
lot occupied

3. Whenever any such hotel or apartment hotel building hereafter erected shall be located on any other than a corner lot or plot, it shall not cover in the aggregate more than 90 per cent. of the area of such lot or plot at and above the second storey floor level, if not more than four storeys in height, commencing at and above the second storey floor level, and on a corner lot, when covering an area of not more than 3,000 square feet, it shall not occupy more than 95 per cent. of the area of such lot at and above the second storey level.

On an inside
lot

On a corner
lot

Free air space
may be
distributed

4. In case any such building is to occupy a number of lots, the Inspector of Buildings may allow the free air space proportioned as herein stated, to be distributed in such manner, as in his opinion will equally as well secure light and ventilation.

SECTION 13.

Office Building—Definition of.

Rooms for
business
purposes

1. An office building shall be taken to mean and include every building, which shall be divided into rooms above the first storey and be intended and used for office purposes, and no part of; which shall be used for living purposes, excepting only for the janitor and his family.

Percentage of
lot occupied

Occupation of area of inside lot limited. Office buildings when erected on a corner shall not cover more than 95 per cent. of the lot area, and an inside lot shall, at and above the second floor level, not cover more than 90 per cent. of the lot area.

SECTION 14.

Frame Building—Definition of.

Meaning of
term

1. A frame building shall be taken to mean a building or structure of which the exterior walls or a portion thereof shall be constructed of wood, regardless of its external covering.

PART IV.

QUANTITY OF MATERIALS.

SECTION 15.

Brick.

1. The brick used in all buildings shall be good, Quality hard, well-burnt brick.
2. When old brick are used in any wall, they shall Old brick be thoroughly cleaned before being used, and shall be whole and good, hard, well-burnt brick.
3. Concrete blocks or brick made of all material other than clay having the approval of the Commissioners of the City of Edmonton, and complying with such tests as they may require and Section 133 of this By-Law, may be used in place of brick made of clay.

Sand.

4. The sand used for mortar in all buildings shall Quality be clean, sharp grit and free from loam dirt or vegetable matter.

SECTION 16.

Lime Mortar.

1. Slaked lime mortar shall be made of one part of Component parts lime paste and not more than four parts of sand.
2. All lime used for mortar shall be thoroughly QUALITY burnt and of good quality, properly slacked and allowed to stand and cool not less than four days before it is mixed with the sand.

Cement Mortar.

3. Cement mortar shall be made of cement and sand Component parts in the proportion of one part of cement, and not more than three parts of sand, and shall be used immediately after being mixed.

Measured
and mixed

4. The cement and sand are to be measured and thoroughly mixed before adding water.

Fineness

5. Cements must be very finely ground and free from lumps.

Cements and Lime Mortar.

Component
parts

6. Cement and lime mortar mixed shall be made of one part slaked lime paste, one part of cement, and not more than three parts of sand; the quality of the respective parts to accord with the requirements before stated in this section. This or cement mortar to be used in all substructure masonry.

SECTION 17.

Cements.

Portland
cement

1. Portland cement shall be held to mean such cement as shall consist of a mixture of argillaceous and calcareous materials calcined together and subsequently ground to an impalpable powder, and thereafter to receive no addition of other substances, except a maximum of two per cent. of gypsum or lime for the purpose of regulating the setting and when tested neat, after one day set in air, be capable of sustaining without rupture a tensile strain of at least 120 pounds per square inch, and after one day in air, and six days in water, shall be capable of sustaining without rupture a tensile strain of at least 400 pounds per square inch.

Required
length

Other than
Portland
cement

2. Cements other than Portland cement shall be considered to mean such cement as will, when tested neat, after one day set in air be capable of sustaining without rupture, a tensile strain of at least 60 pounds per square inch, and after one day in air and six days in water be capable of sustaining without rupture a tensile strain of at least 120 pounds per square inch, This not to be used for substructure masonry.

Strength
required

Record of
tests

3. The Inspector of Buildings shall order said tests to be made at such times and under his supervision of any building material, and shall keep a record book of the results of said tests and said record books shall be available for public information.

SECTION 18.

Concrete.

1. Concrete for foundations shall be made of at least one part of cement, two and a half parts of sand and five parts of clean, broken stone, of such size so as to pass in any way through a two-inch ring, or good, clean gravel may be used in the same proportion as broken stone. Component parts

2. The cement, sand and stone or gravel shall be measured and mixed as is prescribed for mortar. Measured and mixed

3. All concrete shall be properly rammed or puddled into place and allowed to set without being disturbed. Ramming

SECTION 19.

Quality of Timber.

1. All timbers and wood beams used in any building shall be of good sound material free from rot, large and loose knots, shakes, or any imperfection whereby the strength may be impaired. Sound and good

2. And be of such size and dimensions as the purpose for which the building is intended requires. Requisite sizes

SECTION 20.

Tests of New Materials.

1. New structural material of whatever nature shall be subjected to such tests and quality, as specified in section 17 paragraph 3 of this By-Law. Character and quality to be determined

SECTION 21.

Structural Material.

1. Wrought Iron.—All wrought iron shall be uniform in character, fibrous, tough and ductile. It shall have an ultimate tensile resistance of not less than 48,000 lbs. per square inch, an elastic limit of not less than 24,000 lbs. per square inch, and elongation of twenty per cent. in eight inches, when tested in small specimens. Quality and strength

Quality and strength

2. Steel.—All structural steel shall have an ultimate tensile strength of from 54,000 to 64,000 pounds per square inch. Its elastic limit shall be not less than 32,000 pounds per square inch, and test specimens, ruptured in tension, must show a minimum elongation of not less than 20 per cent. in eight inches. Rivet steel shall have an ultimate strength of from 50,000 to 58,000 pounds per square inch.

Quality

3.—Cast Steel.—Shall be made of open hearth steel containing one-quarter to one-half per cent. of carbon, not over eight one-hundredths of one per cent. of phosphorus, and shall be practically free from blow holes.

Quality and strength

4. Cast Iron.—Shall be of good foundry mixture, producing a clean, tough, gray iron. Sample bars five feet long, one inch square, cast in sand moulds, placed on supports four feet six inches apart, shall bear a central load of 450 pounds before breaking. Casting shall be free from serious blow holes, cinder spots and cold shuts. Ultimate tensile strength shall not be less than 16,000 pounds per square inch when tested in small specimens.

PART V.

EXCAVATIONS AND FOUNDATIONS.

SECTION 22.

Excavations.

Guarded and protected

1. All excavations for buildings shall, by the person persons, or corporations causing said excavation to be made, be properly guarded and protected so as to prevent the same from becoming dangerous to life or limb.

Sheathe piled

2. And shall be sheathe piled by the person or persons causing the excavations to be made when necessary to prevent the adjoining earth from caving in.

When depth of excavation is more than ten feet

3. Whenever an excavation for building or other purposes shall be made the same shall be properly guarded and protected by the person, persons or corporation causing said excavation to be made, so as to prevent the

same from becoming dangerous to life or limb and shall be sheathe piled where necessary to prevent the adjoining earth from caving in by reason of its own weight, or by reason of any load that may rest upon it.

Excavations.

4. Whenever an excavation shall be carried below the adjoining street side-walk, the person or persons making such or causing such excavations to be made shall preserve any contiguous wall from injury, and also the sidewalk, and sustain and protect and underpin the same at his or their own cost and expenses, so that the said wall and sidewalk shall be made to remain practically as safe as before such excavation was commenced.

When contiguous walls are to be underpinned by parties building

5. The adjoining property owner shall by the person or persons aforesaid be given timely written notice of the intention of such person to make or have such excavation made, and the said owner may permit the necessary occupancy of their ground and premises so that their walls may be under-pinned and sustained.

Notice to be given adjoining property owner

6. If the person whose duty it shall be to protect any wall or sidewalk or adjoining property from injury, as already provided, shall neglect or fail to do so after having had due notice to that effect from the Inspector of Buildings, then the said Inspector may enter upon the premises and furnish such support and protection as may be in his opinion required, the expense incurred in connection with the work to be collectible from the party or parties whose duty it was, as hereinbefore specified, to furnish such support and protection, either when the next payment of taxes upon said property is being made, or in a court of law, any time after the expiration of thirty days from the time of the carrying out of the said work.

When Inspector of Buildings shall attend to making walls safe

7. Owners in establishing the depth of basements under buildings must first confer with the City Engineer as to the depths at which basements may be drained on the respective streets, as the City will not undertake to provide drainage for basement which, allowing for the proper fall from the basement to the sewer, would be below what the depth of the existing sewers will determine.

Adjoining Walls.

By whom
protected

8. In case an adjoining party wall is intended to be used by the person or persons causing the excavation to be made and such party wall is in good condition and sufficient for the uses of the adjoining building, then and in such case the person or persons causing the excavations to be made shall, at his or their expense, preserve such party wall from injury and support the same by proper foundations so that the said party wall shall be and remain practically as safe as before the excavation was commenced.

On neglect or
failure to
protect

9. If the person or persons whose duty it shall be to preserve or protect any wall or walls, structure or structures from injury shall neglect or fail to do so after having had a notice of twenty-four hours from the Inspector of Buildings, then the Inspector of Buildings may enter upon the premises and employ such labor and furnish such materials, and take such steps as in his judgment may be necessary, at the expense of the person or persons whose duty it is to keep the same safe and secure, to make the same safe and secure, or to prevent the same from becoming unsafe or dangerous.

SECTION 23.

Bearing Capacity of Soil.

Where no tests
are made

1. Where no tests of the sustaining power of the soil is made different soils, excluding mud, at the bottom of the footings shall be deemed to safely sustain the following loads to the superficial foot, namely:

Soft clay

2. Soft clay, one ton per square foot.

Loam clay or
fine sand

3. Ordinary clay and sand together, in layers, two tons per square foot.

Loam clay or
fine sand

4. Loam clay or fine sand, firm and dry, two tons per square foot.

Coarse sand,
stiff gravel or
hard clay

5. Very firm, coarse sand, stiff gravel or hard clay, three tons per square foot.

When a test
is made

6. Where a test is made of the sustaining power of the soil the Inspector of Buildings shall be notified so

that he may be present, either in person or by representative. The record of the test shall be filed with the Inspector of Buildings.

7. When a doubt arises as to the safe, sustaining power of the earth, upon which a building is to be erected, the Inspector of Buildings may order borings to be made, or he may order to be tested the sustaining power of the soil at the expense of the owner of the proposed building. Or if borings are made by the Contractor records of the same shall be filed with the Building Inspector.

Borings

SECTION 24.

Pressure under Footings of Foundations.

1. The loads exerting pressure under the footings of foundations in buildings more than three storeys in height are to be computed as follows:

Warehouses
and factories

2. For warehouses and factories, they are to be the full dead load, and the full live load established by Section 129 of this By-Law.

3. In stores and buildings for light manufacturing purposes they are to be the full dead load and seventy-five per cent. of the live load established by Section 129 of this By-Law.

Stores and
light manufac-
turing
buildings

4. In churches, schoolhouses, and places of public amusement or assembly, they are to be the full dead load, and seventy-five per cent. of the live load, established by Section 129 of this By-Law.

Churches,
school houses
and places of
public
assembly

5. In office buildings, hotels, apartment hotels, dwellings, apartment houses, lodging houses and stables they are to be the full dead load, and sixty per cent. of the live load established by Section 129 of this By-Law.

Office buildings
hotels,
dwellings,
apartments,
lodging houses
and stables

6. Footings shall be so designed that the loads will be as nearly uniform as possible, and not in excess of the safe bearing capacity of the soil, as established by Section 23 of this By-Law.

Uniform
pressure

SECTION 25.

Foundations.

Depth required 1. Within the first and second fire limits every building shall have foundations of brick, stone, iron, steel or concrete laid not less than four feet below the surface of the earth, laid on solid ground and not upon filled-in material or soil containing a mixture of organic matter, but may rest upon piles when solid ground is not found.

Wood Piles.

Number and spacing 2. Piles of wood intended to sustain a wall pier or posts shall be spaced not more than thirty-six inches, nor less than 20 inches on centres, and they shall be driven to a solid bearing, if practicable to do so, and the number of such piles shall be sufficient to support the superstructures proposed.

Size of piles 3. No wood pile shall be used of less dimension than five inches at the small end, and ten inches at the butt for short piles or piles twenty feet or less in length, and twelve inches at the butt for long piles, or piles more than twenty feet in length.

Maximum load 4. No wood pile shall be weighed with a load exceeding thirty thousand pounds.

5. When a wood pile is not driven to refusal, its safe sustaining power in tons shall be determined by the following formula:

Formula for strength of pile not driven to refusal 6. Twice the weight of the hammer in tons multiplied by the height of the fall in feet divided by least penetration of pile under the last blow in inches, plus one.

Notification of test piles 7. The Inspector of Buildings shall be notified of the time when such test piles will be driven, that he may be present, either in person or by representative.

Line for top of piles 8. The tops of all piles shall be cut off below the line of constant saturation.

Concrete between tops of piles 9. Concrete shall be rammed down in the interspaces between the heads of the piles to a depth and thickness of not less than twelve inches, and for one foot in width outside of the piles.

Concrete Piles.

10. Piles of concrete or reinforced concrete piles may be made of concrete either reinforced or plain. Plain or reinforced

11. Plain concrete piles must be molded in place by methods which are reasonably certain to secure perfect full-sized piles, reinforced concrete piles, if properly designed to resist the shock of driving, and if driven with a cushion to lessen the shock, or if put down by a water jet, may be molded, allowed to harden, and then driven or jetted into place. Molded in place

12. In case concrete piles are used, whether reinforced or otherwise, their bearing power shall, if the Building Inspector so require, be determined by putting in one or more test piles and loading them after the concrete is sufficiently hard. Strength determining the

13. The full working load in the structure shall not be more than one half of the load under which the pile begins to settle. Working load

14. In no case, however, shall the working load on a concrete pile exceed twenty-five tons per square foot of cross section of concrete plus 6,000 pounds per square inch of any longitudinal steel reinforcement. Concrete piles shall always be made of mixture not leaner than one part cement, two parts sand and five parts gravel or broken stone. The gravel or stone must all be capable of passing a one inch ring, and the concrete must be mixed by machinery a batch at a time and the concrete must be turned over completely at least twenty-five times. One complete revolution of the machinery, if not too rapid, will count as one turning of the concrete. Maximum load

15. Concrete shall be rammed down in the inter-spaces between the heads of the piles to a depth and thickness of not less than 12 inches, and for one foot in width outside of the piles. Concrete between tops of piles

Metal in Foundations.

16. Where metal is incorporated in or forms part of a foundation or footing, it shall be clean and free from rust and be thoroughly imbedded in concrete. The metal shall meet the requirements of Section 21 of this By-Law. The designs shall be in accordance with the Section 110 of this By-Law. To be protected from rust

Piers or
caisson work

17. When foundations are carried down through earth by piers of stone, brick, or concrete in caissons the load on same shall not be more than—

18. Six tons to the square foot in open caisson or sheathe pile trenches when carried down to firm gravel or hard clay.

Open caissons
or sheathe pile
trenches

19. Sixteen tons to the square foot in open caissons or sheathe pile trenches when carried down to rock.

SECTION 26.

Foundation Walls.

Meaning of
term

1. Foundation walls shall be construed to include all walls and piers built below the curb level or nearest tier of beams to the curb, or to the average level of the ground adjoining the walls, to serve as supports for walls, piers, columns, girders, posts or beams.

Materials

2. Foundation walls shall be built of stone, brick, Portland cement, concrete, iron or steel.

Thickness
when of stone

3. If built of rubble stone, or Portland cement concrete, they shall be at least eight inches thicker than the wall next above them to a depth of twelve feet below the curb level, and for every additional ten feet, or part thereof deeper they shall be increased four inches in thickness.

Thickness
when of brick

4. If built of brick they shall be at least four inches thicker than the wall next above them to a depth of twelve feet below the curb level, and for every additional ten feet or part thereof, deeper, they shall be increased four inches in thickness.

Base Course.

Materials

5. The footing or base course shall be of stone or concrete, or both, or of concrete or stepped up brickwork of sufficient thickness and area to safely bear the weight to be imposed thereon.

If of concrete

6. If the footing or base course be of concrete, the concrete shall not be less than twelve inches thick.

7. If of stone, the stones shall not be less than two by three feet, and at least eight inches in thickness for walls, and not less than ten inches in thickness if under piers, columns or posts. If of stone

8. The footing or base course whether formed of concrete or stone shall be at least twelve inches wider than the bottom width of walls and at least twelve inches wider on all sides than the bottom width of said piers, columns or posts. Projection of footings or base course

9. If the superimposed load is such as to cause undue transverse strain on a footing projecting twelve inches, the thickness of such footing is to be increased so as to carry the load, with safety. All base stones shall be well bedded and laid crosswise edge to edge. When thickness is to be increased

Stepped up Footings.

10. If stepped up footings of brick are used in place of stone above the concrete, the off-sets, if laid in single courses shall each not exceed two inches, or if laid in double courses, then each shall not exceed four inches, offsetting the first course of brick work back one half the thickness of the concrete base, so as to properly distribute the load to be imposed thereon. Off-sets in brick

Inverted Arches.

11. If, in place of a continuous foundation wall, isolated piers are to be built to support the superstructure where the nature of the ground and the character of the building make it necessary, inverted arches resting on a proper bed of concrete, both designed to transmit with safety the superimposed loads, shall be turned between the piers. The thrust of the outer piers shall be taken up by suitable wrought iron or steel rods and plates. Between

Grillage in Foundations.

12. Grillage beams of wrought iron or steel resting on a proper concrete bed may be used, such beams shall be provided with separators and bolts enclosed and filled solid between with concrete, and of such sizes, and so arranged as to transmit with safety the superimposed loads. Construction

Headers in Stone Walls.

Requirement
as to number

13. All stone walls twenty-four inches or less in thickness shall have at least one header extending through the wall in every three feet in height from the bottom of the wall, and in every three feet in length, and if over twenty-four inches in thickness, shall have one header for every six superficial feet on both sides of the wall, laid on top of each other to bond together, and running into the wall at least two feet.

Size of headers

14. All headers shall be at least twelve inches in width, and eight inches in thickness, and consist of good flat stones.

How stones
shall be laid

15. No stone shall be laid in such walls in any other position than on its natural bed.

stones must
bond

16. No stone shall be used that does not bond or extend into the wall at least six inches.

Beds and joints
filled

17. Stones shall be firmly bedded in Portland cement mortar and all spaces and joints thoroughly filled.

PART VI.

WALLS AND PARTITIONS.

SECTION 27.

Materials of Walls.

Walls, what
constructed of

1. The walls of all buildings, other than frame or wood buildings, shall be constructed of stone, brick, Portland cement concrete, iron or steel, or if approved by the Commissioners of the City of Edmonton, other hard incombustible material, and the several component parts of such buildings shall be as herein provided.

SECTION 28.

(Walls and Piers)

Bearing Walls Defined.

1. Bearing walls shall be taken to mean those walls on which the beams, girders or trusses rest.

Bearing Walls with Openings.

2. If any horizontal section through any part of any bearing wall in any building shows more than thirty per centum area of flues and openings the said wall shall be increased four inches in thickness for every fifteen per centum, or fraction thereof, of flue or opening area in excess of thirty per centum.

When to be increased in thickness

Brick and Masonry Work

3. The wall and piers of all buildings shall be properly and solidly bonded together with close joints filled with mortar. They shall be built in a line and be carried up plumb and straight.

How built

4. The walls of each story shall be built up the full thickness to the top of the beams above.

Off-sets in walls to be at top line

5. All brick laid in non-freezing weather shall be well wet before being laid.

Bricks to be wet

6. Walls or piers, or parts of walls or piers, shall not be built in freezing weather, unless precautions are taken to properly protect the built up work from becoming frozen, and if frozen shall not be built upon, but shall be taken down and rebuilt. Freezing weather shall be taken to mean a temperature of thirty-two degrees Fahrenheit or lower.

Frozen walls or piers

Piers.

7. All piers when built of brick shall be built of good hard, well burnt brick laid in cement mortar.

Materials

8. Every pier built of brick, containing less than nine superficial feet at the base, supporting any beam girder, arch or column on which a wall rests, or lintel spanning an opening over ten feet and supporting a wall shall at intervals of not over thirty inches apart in height have built into it a cast iron or steel bond plate of sufficient strength and the full size of the piers.

Cast iron bond plates in brick piers

9. For piers fronting on a street, bond stones to conform with the kind of stone used for the trimmings of the front may be used above the sidewalk.

Front pier bond stones

Cap-stones

10. Cap stones corresponding to the trimmings of the front proportioned to the weight to be carried, but not less than five inches in thickness by the full size of the pier, may be used above the said sidewalk for piers fronting on a street. For the capping of all other piers, cast iron plates of equal strength by the full size of the pier shall be set under all columns or girders.

Isolated brick piers breadth proportioned to height

11. Isolated brick piers shall not exceed in height ten times their least dimensions.

Stone Posts Under Interior Columns.**Prohibited**

12. Stone posts for the support of posts or columns above shall not be used in the interior of any building.

Heading Course in Brick Walls.**Every sixth course**

13. In all brick walls every sixth course shall be a heading course, except where walls are faced with brick in running bond, in which latter case, every sixth course shall be bonded into the backing by cutting the course of the face brick and putting in diagonal headers behind the same, or by splitting the face brick in half, and backing the same with a continuous row of headers.

Face brick to be bonded into the backing**Roman size face brick**

14. Where face brick is used of a different thickness from the brick used for the backing, the courses of the exterior and interior brickwork shall be brought to a level bed at intervals of not more than ten courses in height of the face brick, and the face brick shall be properly tied to the backing, by a heading course of the face brick.

Thickness for walls with face laid in running bond

15. All bearing walls faced with brick laid in running bond or imitations of other bonds, shall be four inches thicker than the walls are required to be under any section of this By-law.

Ashlar**Minimum thickness**

16. Stone used for the facing of any building, and known as ashlar, shall not be less than four inches thick.

17. Stone ashlar shall be anchored to the backing and the backing shall be of such thickness as to make the walls independent of the ashlar, conform as to the thickness with the requirements of Sections 31 and 32 of this By-law.

Ashlar to be anchored

18. Unless the ashlar be at least eight inches thick and bonded into the backing, and then it may be counted as part of the thickness of the wall.

When ashlar may be counted in thickness of walls

SECTION 29.

Mortar for Walls and Ashlar.

1. All foundation walls, isolated piers, parapet walls and chimneys above roofs shall be laid in Portland cement mortar.

When cement mortar required

2. But this shall not prohibit the use in cold weather of a small proportion of lime to prevent the mortar from freezing.

Use of small portion of lime allowed in cement mortar

3. All other walls built of brick or stone shall be laid in lime, cement, or lime and cement mortar mixed.

Mortar for walls

4. The backing up of all stone ashlar shall be laid up with cement mortar, or cement and lime mortar mixed, but the back of the ashlar may be parged with lime mortar or coated with asphaltum varnish to prevent discoloration of the stone..

Mortar for backing of stone ashlar

SECTION 30.

Limiting the Height of Buildings.

1. No non-fireproof building or structure hereafter erected shall exceed fifty-five feet in height, nor the heights specified for non-fireproof buildings of the several respective classes mentioned in Section 106 of this By-law.

Non-fire-proof buildings

2. No building or structure herein erected, except it meets the requirements of Section 106 of this By-law shall exceed fifty-five feet in height, or if to be used above the ground floor as factories, warehouses or stores for the storage of merchandise, shall it exceed one hundred feet in height.

Height proportioned to width of street

Measurements
for height

Cornices

Tank, elevator
inclosures

3. Such height shall be the perpendicular distance measured in a straight line, taken at the centre of the facade of the building, from the curb level to the highest point of the roof beams, not including in such measurement of height cornices which do not extend more than 5 feet above the highest point of the roof beams nor inclosures for the machinery or elevators which do not exceed fifteen feet in height, or inclosures for tanks which do not exceed twenty feet in height, above the roof beams and do not exceed in united area ten per centum of the area of the roof.

SECTION 31.

Walls for Dwelling House Class.

1. The expression "Walls for dwelling house class" shall be taken to mean and include walls for the following buildings:

Apartment Houses	Hospitals
Apartment Hotels	Hotels
Asylums	Laboratories
Club Houses	Lodging Houses
Convents	Parish Buildings
Dormitories	Schools
Dwellings	Studios

2. For buildings hereafter erected in the dwelling house class, the minimum thickness of all independent surrounding and dividing walls in the same, carrying the loads of floors and roofs, shall be in accordance with the following table:

TABLE OF THICKNESS OF WALLS IN RESIDENCES UP TO FIFTY FEET
IN HEIGHT

HEIGHT	BASEMENT		STOREYS							
	Stone	Brick or Conc'te	1	2	3	4	5	6	7	8
1 Storey	17	13	9							
2 Storey	20	13	13	9						
3 Storey	24	17	17	13	13					
4 Storey	27	21	17	17	13	13				
5 Storey	30	21	21	17	17	13	13			
6 Storey	33	25	21	21	17	17	13	13		
7 Storey	36	30	25	21	21	17	17	13	13	
8 Storey	39	30	25	25	21	21	17	17	13	13

and in all dwellings with face wall not exceeding 50 feet the foundation wall shall be 12 inches thick, the first storey 12 inches and the second storey 8 inches thick.

4. When the above walls are used for party walls in non-fireproof buildings, the ends of the beams shall rest on corbeled ledges, or when entering the twelve inch sections of the walls shall be staggered. If the beams do not rest on corbeled ledges, or are not so staggered, the twelve-inch sections of the walls shall be increased to not less than sixteen inches in thickness.

5. When used for bearing party walls in fireproof buildings no portion of the walls shall be less than sixteen inches in thickness.

6. If any story exceeds the height stated in Section 35 of this By-law, the thickness of walls shall be increased as stated in said section.

When thickness
of walls to be
increased

NOTE:—The above table for thickness of walls is based upon a minimum size of brick of about $7\frac{1}{2} \times 3\frac{1}{2} \times 2\frac{1}{4}$ inches. Sizes of bricks are variable in different localities.

Partition Walls.

When not over
33 feet between
bearing walls

7. Eight inch brick partition walls may be built to support the beams in such buildings when the distance between the main or bearing walls is not over thirty-three feet;

When over 33
feet between
bearing walls

8. If the distance between the main or bearing walls is over thirty-three feet the brick partition wall shall be not less than twelve inches thick.

9. Provided that no clear span is over twenty-six feet.

Limiting the
height of single
thickness of
wall

10. No section of a wall of the same thickness shall exceed, measured vertically, the height provided elsewhere in this section and in Sections 32 and 35 of this By-law.

Iron Columns and Girders Instead of Partition Walls.

In non-fire-
proof residence
buildings

11. This section shall not be construed to prevent the use of iron or steel girders, or iron or steel girders and column when properly insulated as provided in Section 108 of this By-Law, or piers of masonry for the support of the walls and ceilings over any room which has a clear span of more than twenty-six feet between walls, in such residence buildings as are not constructed fireproof.

In fire-proof
residence
buildings

12. Nor to prohibit the use of iron or steel girders or iron or steel girders and columns in place of brick walls in buildings which are to be used for residence purposes when constructed fireproof, and insulated.

Clear Span Thicknesses.

Walls must be
thicker when
clear span
exceeds 26 feet

13. If the clear span is to be over twenty-six feet, then the bearing walls shall be increased four inches in thickness for every twelve and one-half feet or part thereof, that said span is over twenty-six feet.

Piers or
buttresses
instead of
increased
thickness

14. Or shall have instead of the increased thickness, such piers or buttresses as, in the judgment of the Building Inspector, may be necessary.

SECTION 32.

Walls for Warehouse Class

1. The expression "walls for warehouse class" shall be taken to mean and include walls for the following buildings:

Armories	Museums
Barns	Observatories
Breweries	Office Buildings
Carriage Houses	Police Stations
Churches	Printing Houses
Cooperage Shops	Public Assembly Buildings
Court Houses	Pumping Stations
Factories	Railroad Buildings
Foundries	Refrigerator Houses
Garages	Slaughter Houses
Jails	Stables
Libraries	Stores
Light and Power Houses	Sugar Refineries
Machine Shops	Theatres
Markets	Warehouses
Mills	Wheelwright Shops

2. For buildings hereafter erected in the warehouse class twenty-five feet or less in width between walls or bearings the minimum thickness of all independent surrounding or dividing walls in the same, carrying the loads of floors and roofs shall be made in accordance with the following table:

WAREHOUSE CLASS—BRICK WALLS

(Minimum thickness in inches.)

HEIGHT	BASEMENT		STOREYS									
	Stone	Brick or Conc'te	1	2	3	4	5	6	7	8	9	10
One Storey.. . .	20	16	12									
Two Storeys....	20	16	12	12								
Three Storeys..	20	16	16	12	12							
Four Storeys....	24	20	16	16	12	12						
Five Storeys	28	24	20	16	16	12	12					
Six Storeys.....	32	28	24	20	16	16	12	12				
Seven Storeys ...	32	28	24	24	20	16	16	12	12			
Eight Storeys....	36	32	28	24	24	20	16	16	12	12		
Nine Storeys ...	36	32	28	28	24	24	20	16	16	12	12	
Ten Storeys	36	32	32	28	28	24	24	20	16	16	12	12

3. When the above walls are used for party walls in non-fireproof buildings, the twelve-inch sections of the walls shall have corbeled ledges to carry the ends of the beams, or be increased in thickness to not less than sixteen inches, and the beams entering the walls shall be staggered. If the beams do not rest on corbeled ledges or are not so staggered, the twelve and sixteen-inch sections of the wall shall be increased to not less than twenty inches.

NOTE:—The above table for thicknesses of walls is based upon a minimum size of brick of about $7\frac{7}{8} \times 3\frac{1}{2} \times 2\frac{1}{4}$ inches.

4. When used for bearing party walls in fireproof buildings no portion of the walls shall be less than sixteen inches in thickness.

5. If any story exceeds the height stated in Section 35 of this By-Law, the thickness of walls shall be increased as stated in said section.

Clear Span Thickness.

6. If there is to be a clear span of over twenty-five feet between the bearing walls, such walls shall be four inches thicker than in this section specified, for every twelve and one-half feet, or fraction thereof that the said walls are more than twenty-five feet apart, or shall have instead of the increased thickness such piers or buttresses as, in the judgment of the Building Inspector, may be necessary.

Walls thickened according to clear span

Walls for Public Buildings.

7. The walls of buildings of a public character shall be not less than in this By-Law specified for warehouses with such piers or such buttresses, or supplemental columns or iron or steel properly insulated as provided in Section 108 as, in the judgment of the Building Inspector, may be necessary to make a safe and substantial building.

To be supplemented in strength

SECTION 33.

Partition Walls or Girders and Columns.

1. In all stores, warehouses and factories over twenty-five feet in width between walls there shall be brick partition walls or girders supported on iron, steel, or wood columns, or piers of masonry. When such girders or columns are of iron or steel they shall be properly insulated as provided in Section 108 of this By-Law.

Exceeding a width of 25 feet between walls

Floor Areas in Stores, Warehouses, Factories, and Other Buildings.

2. In all non-fireproof stores, warehouses and factories, no single floor area, between brick fire walls of a thickness corresponding to the main bearing walls, shall exceed the following:

Non-fireproof buildings

3. When located fronting on one street only, may cover an area or not more than five thousand square feet;

Fronting on one street only inside lots.

■

Extending
from
street to
street

4. Or when extending from street to street may cover an area or not more than six thousand square feet;

Fronting on
two streets,
single corner

5. Or if a corner building fronting on two streets, it may cover not more than six thousand square feet;

Fronting on
three streets,
double corner
or tee shape

6. Or when such a building fronts on three streets or two streets and a lane it may cover an area of not more than seven thousand five hundred square feet between brick fire walls.

Fireproof
buildings not
exceeding 55
feet in height

7. In all stores, warehouses and factories, not exceeding fifty-five feet in height, which may be built fireproof, the areas between brick fire walls of a thickness corresponding to the main bearing walls, may be one hundred per centum greater than the areas stated hereinbefore in this section for non-fireproof buildings, that is to say, —

Fronting on
one street only,
inside lot

8. When located fronting on one street only it may cover an area or not more than ten thousand square feet;

Extending
from street to
street

9. Or when such a building extends from street to street it may cover an area or not more than twelve thousand square feet;

Fronting on
two streets,
single corner

10. Or if a corner building fronting on two streets it may cover an area of not more than twelve thousand square feet;

Fronting on
three streets,
double corner
or tee shape

11. Or when such a building fronts on three streets or two streets and a lane it may cover an area of not more than fifteen thousand square feet between brick fire walls.

Fireproof
buildings
exceeding 55
feet in height

12. But in case any such fireproof building exceeds the height of fifty-five feet, the areas between brick fire walls of a thickness corresponding to the main bearing walls may be the same, but no greater than the areas hereinbefore stated in the section for non-fireproof construction;

13. Provided, however, in case the foregoing described buildings are completely equipped with a system of automatic sprinklers in a manner approved by the Commissioners of the City of Edmonton, the areas between the brick walls may be increased as follows:

When foregoing buildings have automatic sprinklers

14. For the non-fireproof constructed buildings, the respective areas hereinbefore stated may be increased fifty per centum;

Non-fireproof buildings

15. For the fireproof constructed buildings not exceeding fifty-five feet in height, the respective areas hereinbefore stated may be increased thirty-three and one-third per centum; and,

Fireproof buildings not exceeding 55 feet in height

16. For the fireproof constructed buildings exceeding fifty-five feet in height; the respective areas hereinbefore stated may be increased thirty-three and one-third per centum.

Fireproof building exceeding 55 feet in height

17. For fireproof constructed buildings intended or designed for occupancy other than for stores, warehouses and factories, the areas between brick fire walls of a thickness corresponding to the main bearing walls may be the same, but no greater than the areas hereinbefore stated in this Section for fireproof building not exceeding fifty-five feet in height with automatic sprinkler protection, that is to say,—

Fireproof buildings other than stores, warehouses and factories, not exceeding 125 feet in height

18. When located fronting on one street only, may cover an area of not more than thirteen thousand three hundred and thirty-three square feet;

Fronting on one street only, inside lot

19. Or when such a building extends from street to street the area may be no more than sixteen thousand square feet;

Extending from street to street

20. Or if a corner building fronting on two streets, it may cover an area of not more than sixteen thousand square feet;

Fronting on two streets, single corner

21. Or when such a building fronts on three streets or two streets and a lane it may cover an area between said brick fire walls of not more than twenty thousand square feet;

Fronting on three streets, double corner or tee shape

Last described
building, when
equipped with
automatic
sprinklers

22. Provided, however, in case such buildings are completely equipped with a system of automatic sprinklers as hereinbefore described, the respective areas between the brick fire walls may be increased fifty per centum.

Automatic
sprinklers
system to be
kept in work-
ing order

23. The automatic sprinkler system, including the water supply in connection therewith, hereby required in this Section shall be installed and kept in perfect working order by the owner, lessee or occupant of the premises.

Re-Capitulation of Limit of Floor Area.

Recapitulation

24. In tabulated form a recapitulation of the extreme limit of areas in each case between brick fire walls, as specified in this Section, is as follows:

25. Non-fireproof Construction: Any occupancy, height limited to 55 feet.

Area, without automatic sprinkler protection. Fronting on one street only, 5,000 sq. ft.
Fronting on two streets, that is, extending through from street to street.... 6,000 sq. ft.
Corner building, fronting on two streets, 6,000 sq. ft.
Fronting on three streets 7,500 sq. ft.

26. Non-fireproof construction: Any occupancy, height limited to 55 feet.

Area, without automatic sprinkler, protection (being an increase of 50 per cent. over the unsprinkled area) one street front, 7,500 sq. ft.
Two street fronts, 9,000 sq. ft.
Corner building, two street fronts, 9,000 sq. ft.
Three street fronts, 11,250 sq. ft.

27. Fireproof construction : Occupancy, stores, warehouses and factories. Height when not exceeding 55 feet.

Area, without automatic sprinkler protection.

Fronting on one street only . . 10,000 sq. ft.

Fronting on two streets, that is, extending through from street to street, 12,000 sq. ft.

Corner building, fronting on two streets,

12,000 sq. ft.

Fronting on three streets

15,000 sq. ft.

28. Fireproof construction : Occupancy, stores, warehouses and factories. Height when not exceeding 55 feet.

Area with automatic sprinkler protection (being an increase of 33 1-3 per cent. over the unsprinkled area).

One street front, 13,333 sq. ft.

Two street fronts, 16,000 sq. ft.

Corner building, two street fronts,

16,000 sq. ft.

Three street fronts, 20,000 sq. ft.

29. Fireproof construction : Occupancy, stores, warehouses and factories. Height limited to 100 feet.

Area, without automatic sprinkler protection, same as for non-fireproof construction.

Fronting on one street only 5,000 sq. ft.

Fronting on two streets, that is, extending through from street to street . . . 6,000 sq. ft.

Corner building, fronting on two streets,

6,000 sq. ft.

Fronting on three streets

7,500 sq. ft.

30. Fireproof construction : Occupancy, stores, warehouses and factories. Height limited to 100 feet.

Area, with automatic sprinkler protection (being an increase of 33 1-3 per cent. over the unsprinkled area)

One street front, 6,666 sq. ft.

Two street fronts, 8,000 sq. ft.

Corner building, two street fronts,

8,000 sq. ft.

Three street fronts, 10,000 sq. ft.

31. Fireproof construction : Occupancy, other than stores, warehouses and factories. Height limited.

Area, without automatic sprinkler protection, same as for fireproof construction limited to 55 feet and with automatic sprinkler protection.

Fronting on one street only . . 13,333 sq. ft.

Fronting on two streets, that, is, extending through from street to street, . . 16,000 sq. ft.

Corner Building, fronting on two streets,

16,000 sq. ft.

Fronting on three streets
20,000 sq. ft.

32. Fireproof construction : Occupancy, other than stores, warehouses and factories. Height unlimited.

Area, with automatic sprinkler protection (being an increase of 50 per cent. over the unsprinklered area).

One street front,
20,000 sq. ft.

Two street fronts,
24,000 sq. ft.

Corner building, two street fronts,
24,000 sq. ft.

Three street fronts,
30,000 sq. ft.

Prohibiting removal of walls

33. No wall or part of wall in any existing building nor in any building hereafter erected shall be removed to produce a larger area than those named in this Section.

Communicating areas to have automatic sprinkler systems

34. When more than two fireproof or non-fireproof buildings communicate, although protected by double standard fireproof doors, they shall be provided a system of approved automatic sprinklers where occupied as stores, warehouses and factories.

Openings in fire walls, maximum size for

35. Openings in the brick fire walls of buildings specified in this Section shall in no case exceed eight feet in width, nor more than eight feet in height, and above each such opening there shall be a curtain wall between the top of the opening and the ceiling line of at least three feet. The openings shall be provided with approved automatic self-closing standard fireproof doors on both sides of the wall.

Doors, automatic self-closing

SECTION 34.

Increased Thickness of Walls for Buildings More Than One Hundred and Five Feet in Depth.

1. All buildings, not excepting dwellings, that are over one hundred and five feet in depth, without a cross-wall or proper piers or buttresses, shall have the side or bearing walls increased in thickness four inches more than is specified in the respective sections of this By-law for the thickness of walls for every one hundred and five feet or part thereof, that the said buildings are over one hundred and five feet in depth.

When there are
on crosswalls
or piers

Reduced Thickness for Interior Walls.

2. In case the walls of any building are less than twenty-five feet apart, and less than forty feet in depth, or there are crosswalls which intersect the walls, not more than forty feet distant, or piers or buttresses built into the walls, the interior walls may be reduced in thickness in just proportion to the number of crosswalls, piers or buttresses, and their nearness to each other; provided, however, that this clause shall not apply to walls below fifty-five feet in height, and that no such wall shall be less than twelve inches thick at the top, and gradually increased in thickness by set-offs to the bottom.

When interior
walls may be
reduced in
thickness

Proviso

3. The Inspector of Buildings is hereby authorized and empowered to decide (except where herein otherwise provided for) how much the walls herein mentioned may be permitted to be reduced in thickness without endangering the strength and safety of the building, according to the peculiar circumstances of each case.

Reduced
thickness
permitted

SECTION 35.

Height of Storeys.

1. The height of the storeys for all given thicknesses of walls shall not exceed:

First Storey	18 feet in the clear
Second Storey	14 feet in the clear
Third Storey	12 feet in the clear
Fourth and Upper Storeys,	11 feet in the clear

2. And if any storey exceeds the foregoing heights, the walls of any such storey and all walls below that storey shall be increased four inches in thickness.

If increased
in height

3. The height of a storey shall be the perpendicular distance from top of the finished floor in one storey to the top of finished floor of the next storey.

Defining height
of storey

Meaning of Storeys.

- First storey 4. The first storey shall be taken to mean the storey the floor of which is first above the basement.
- Upper storeys 5. The upper storeys shall be taken to mean the storeys the floors of which are above the first storey and numbered in regular succession, counting upwards.

Meaning of Basement and Cellar.

- Basement 6. A basement shall be taken to mean that portion of a building the floor of which is below the curb level at the centre of the front of the building, more than one foot, and not more than three-fourths of the height of said portion measuring from floor to ceiling.
- Cellar 7. A cellar shall be taken to mean the lowest portion of a building the floor of which is below the curb level at the centre of the front of the building, more than three-fourths of the height of said portion measuring from the floor to the ceiling.

SECTION 36.

Inclosure Walls for Skelton Structures.

- Thickness for uppermost portion 1. Walls of brick built in between iron or steel or reinforced concrete columns and supported wholly or in part on iron or steel or reinforced concrete girders.
2. Shall not be less than twelve inches thick for sixty-five feet of the uppermost height thereof, or to the nearest tier of beams to that measurement, in any building so constructed.
3. And the lower section of sixty feet or to the nearest tier of beams to such vertical measurement, or part thereof, shall have a thickness of four inches more than is required for the section next above it down to the tier of beams nearest to the curb level;
- Thickness below curb level 4. And thence downward, the thickness of walls shall increase in the ratio prescribed in Section 26 of this By-Law.

Reduced Thickness for Adjoining Walls.

5. When two independent buildings of skeleton type of construction, and of the same height adjoin each other, the thickness of the said independent walls above the foundation for such sections where they adjoin must be not less than eight inches respectively.

Thickness
stated

SECTION 37.

Curtain Walls.

1. Curtain walls shall be taken to mean walls built in the interior of a building between piers or iron or steel columns, and being non-bearing walls—
2. Shall not be less than twelve inches thick for sixty-five feet of the uppermost height thereof or nearest tier of beams to that height.
3. And increased four inches for the lower section of sixty feet or nearest tier of beams to that height;
4. And thence downward the thickness of walls shall increase in the ratio prescribed in Section 26 of this By-Law.

Interior of
building

Thickness for
uppermost
portion

Thickness for
lower portion

Thickness
below curb
level

SECTION 38.

Existing Party Walls.

1. Walls heretofore built for or used as party walls whose thickness at the time of their erection was in accordance with the requirements of the then existing laws, but which are not in accordance with the requirements of this By-Law, may be used, if in good condition for the ordinary uses of party walls, provided height of the same be not increased..

Walls built for
party walls
may be so used

SECTION 39.

Lining Existing Walls.

1. In case it is desired to increase the height of existing party or independent walls, which are less in thickness than required under this By-Law, the same shall be done by a lining of brickwork to form a combined thickness with the old wall of not less than four

Lining of
independent
or party walls

inches more than the thickness required for a new wall corresponding with the total height of the wall when so increased in height.

Foundations
for linings

2. The said linings shall be supported on proper foundations.

Height for
lining

3. And carried up to such height as the Inspector of Buildings shall require.

Thickness for
and method of
lining

4. No lining shall be less than eight inches in thickness, and all lining shall be laid up in cement mortar and thoroughly anchored to the old brick walls with suitable wrought-iron anchors, placed two feet apart and properly fastened or driven into the old walls in rows alternating vertically and horizontally with each other, the old walls being first cleaned of plaster or other coatings where any lining is to be built against the same.

Anchors

Rubble walls
to be inspected
before being
lined

5. No rubble stone wall shall be lined except after inspection and approval by the Inspector of Buildings.

SECTION 40.

Walls of Unfinished Buildings.

Commenced
under previous
laws, may be
completed

1. Any building, the erection of which was commenced in accordance with specifications and plans submitted to and approved by the Inspector of Buildings prior to the passage of this By-Law, if properly constructed, and in safe condition, may be completed or built upon in accordance with the requirements of law, as to thickness of walls, in force at the time when such specifications and plans were approved.

SECTION 41.

Walls Tied, Anchored and Braced.

Forbidding
side walls
being carried
up in advance
of front or rear
walls

1. In no case shall any wall or walls of any building be carried up more than two storeys in advance of any other wall.

Including
skeleton
structures in
prohibition

2. And this prohibition shall include the enclosure walls for skeleton buildings.

3. The front, rear, side and party walls shall be properly bonded together, or anchored to each other every six feet in their height by wrought-iron tie anchors, not less than one and a half inches by three-eighths of an inch in size, and not less than twenty-four inches in length.

Walls bonded and anchored

Anchors size of

4. The side anchors shall be built into the side or party walls not less than sixteen inches, and into the front and rear walls, so as to secure the front and rear walls to the side, or party walls, when not built and bonded together.

Side anchors distance apart

5. All exterior piers shall be anchored to the beams or girders on the level of each pier.

Exterior piers to be anchored

Walls to be Braced.

6. The walls and beams of every building, during the erection or alteration thereof, shall be strongly braced from the beams of each storey, and when required shall also be braced from the outside until the building is enclosed.

Placing of braces for walls

7. The roof tier of wood beams shall be safely anchored with plank or joist, to the beams of the storey below until the building is enclosed.

Roof beams to be anchored

SECTION 42.

Arches and Lintels.

1. All openings in masonry walls in all buildings shall have good and sufficient arches of stone, brick or terra cotta, well built and keyed with good and sufficient abutments; or lintels of stone, iron or steel of sufficient strength, or reinforced concrete designed, as specified in Section 110 of this By-Law, or any other incombustible material or fabric which has the approval of the Commissioners of the City of Edmonton. The end bearings of all lintels shall be not less than eight (8) inches.

Over door and window openings

Masonry Arches.

Strength of 2. All masonry arches shall be capable of sustaining the weight and pressure which they are designed to carry, and the stress at any point shall not exceed the working stress for the material used, as given in Section 138 of this By-Law.

Tie Rods 3. Tie Rods shall be used where necessary to secure stability in accordance with current good practice.

SECTION 43.

Parapet Walls.

Thickness and height 1. All exterior and division or party walls over fifteen feet high shall have parapet walls not less than eight inches in thickness and carried two feet above the roof.

On commercial and manufacturing buildings 2. But for warehouses, factories, stores and other buildings used for commercial or manufacturing purposes the parapet walls shall be not less than twelve inches in thickness and carried three feet above the roof.

3. And all such walls shall be coped with stone, concrete blocks or terra cotta or any other incombustible material or construction which has the approval of the Commissioners of the City of Edmonton.

SECTION 44.

Hollow Walls.

Quantity of material in 1. In all walls that are built hollow the same quantity of stone, brick or concrete shall be used in their construction as if they were built solid, as in this By-Law provided.

The parts to be tied together 2. And no hollow wall shall be built unless the parts of same are connected by proper ties, either of brick, stone or iron, placed not over twenty-four inches apart.

SECTION 45.

Hollow Bricks on Inside of Walls.

1. The inside four inches of any exterior wall may be built of hard-burnt hollow brick, properly tied and bonded by means of full header courses, every sixth course, into the walls, and of the dimension of the ordinary bricks.

Walls may have inside face of hollow brick

2. Where hollow tile or porous terra cotta blocks are used as lining or furring for walls, they shall not be included in the measurement of the thickness of such walls.

Hollow clay blocks not to be counted in thickness of wall

SECTION 46.

Recesses and Chases in Walls.

1. Recesses for stairways or elevators may be left in the foundation or cellar walls of all buildings, but in no case shall the walls be of less thickness than the walls of the fourth storey, unless reinforced by additional piers with iron or steel girders, or iron or steel columns and girders of sufficient strength properly insulated, and securely anchored to walls on each side.

In walls of the lower storeys

Recesses for Alcoves.

2. Recesses for alcoves and similar purposes shall have not less than eight inches of brickwork at the back of such recesses, and such recesses shall be not more than eight feet in width, and shall be arched over or spanned with iron, steel or concrete lintels of sufficient strength and not carried up higher than eighteen inches below the bottom of the beams of the floor next above.

Limiting depth and width for alcove recesses

Chases for Pipes.

3. No chase for water or other pipes shall be made in any pier, and no more than one-third of the wall thickness.

Proportion of depth to thickness

4. The chases around said pipes shall be filled up with solid masonry for the space of one foot at the top and bottom of each storey.

Filling in required at each floor

Horizontal
chases in walls

5. No horizontal recess or chase in any wall shall be made exceeding three feet in length.

Aggregate Area for Recesses and Chases.

Limiting the
aggregate area

6. The aggregate area of recesses and chases in any wall shall not exceed one-fourth of the whole area of the face of the wall on any storey.

SECTION 47.

Furred Walls.

Brickwork
between ends
of wood beams
to project

1. In all walls furred with wood the brickwork between the ends of wood beams shall project not less than the thickness of the furring beyond the inner face of the wall for the full depth of the beams.

SECTION 48.

Light and Vent Shafts.

Walls of brick

1. In every building hereafter erected or altered, all the walls or partitions forming interior light or vent shafts, shall be built of brick, except that the area of any shafts does not exceed twenty-five square feet, the enclosing walls or partitions may be of such other fireproof materials as shall be approved by the Commissioners of the City of Edmonton.

Other fireproof
material

To extend
above roof

2. The walls of all light or vent shafts, whether exterior or interior, hereafter erected, shall be carried up not less than three feet above the level of the roof.

Walls to be
coped

3. And the brick walls shall be coped as other parapet walls.

When shaft is
covered

4. When the shaft is covered by a ventilating skylight of metal and glass the walls need not be carried more than two feet above the roof.

Metal louvres

5. When metal louvres are used for ventilating purposes, the louvres or slats shall be rivetted to the metal frame.

One Storey Vent Shafts in Private Dwellings.

6. Vent shafts not more than twenty square feet in area to light interior bath rooms in private dwellings may be built of wood studs filled in solidly with brick or hard-burnt clay blocks, or of wood covered on all sides with metal, metal lath and Portland cement plaster, when extending through not more than one storey, and carried not less than two feet above the roof, and covered with a ventilating skylight of metal and glass.

Stud partitions
filled in

SECTION 49.

Brick and Hollow Tile Partitions.

1. Eight-inch brick, and six-inch hollow tile, and four-inch brick or four-inch hollow tile partitions, of hard-burnt clay or porous terra-cotta laid up with cement mortar, may be built, not exceeding in their vertical portions a measurement of fifty for the eight-inch thirty-six for the six-inch and twenty-four for the four-inch, respectively, and in their horizontal measurement a length not exceeding seventy-five feet, unless said partition walls are strengthened by proper crosswalls, piers or buttresses or built in iron or steel framework when the latter is embedded in or insulated by the same material of which the partition is constructed.

Limiting
height and
length

2. All such partitions shall be carried on proper foundations, or on iron or steel or reinforced concrete girders, or on iron or steel girders reinforced concrete columns, properly insulated, or piers of masonry.

SECTION 50.

Cellar Partitions in Residence Buildings of not less than \$8,000 in value.

1. One line of fore and aft partitions in the cellar or lowest storey, supporting stud partitions above, in all residence buildings over twenty feet between bearing walls in the cellar or lowest storey, hereafter erected, shall be constructed of brick, not less than eight inches thick.

Brick partition
wall in cellar
under stud
partition

2. Or piers of brick with openings arched over below the underside of the first tier of beams.

Arched
openings

Girders and
columns or
piers

3. Or girders of iron or steel and iron columns, or piers of masonry may be used.

4. Or if iron or steel or concrete floor beams spanning the distance between bearing walls are used of adequate strength to support the stud partitions above in addition to the floor load to be sustained by the said iron or steel beams, then the fore and aft brick partition or its equivalent, may be omitted.

Foundations
for stud
partitions in
lowest storey

5. If stud partitions are placed in the cellar or lowest storey of any building they shall have good solid stone, brick or Portland cement concrete foundation walls under the same, which shall be built up to the top of the floor beams or sleepers, on top of said foundation walls there shall be laid masonry walls not less than five (5) inches high and of the full width of studs, upon which shall be placed the wooden sills.

SECTION 51.

Main Stud Partitions.

Fore and aft
stud partitions

1. In residence buildings where fore and aft partitions rest directly over each other, they shall run down between the wood floor beams, and rest on the top plate of the partition below.

Fire stop

2. And shall have the studding filled in solid between the uprights to the depth of the floor beams, with suitable incombustible materials.

SECTION 52.

Timber in Walls Prohibited.

Only brace
blocks
permissible

1. No wood nailing pieces shall be used in any wall or any building where stone, brick, cement concrete or iron are commonly used, brace blocks not more than eight (8) inches in length and having not less than two (2) feet of masonry intervening between them may be used for securing wood door frames and trim, or as supports for plaster cornices.

PART VII.

APARTMENT HOUSES, LODGING HOUSES AND
HOTELS

SECTION 53.

Apartment Houses.

1. Every non-fireproof building hereafter erected or altered for use as an apartment house four storeys and basement in height, or having a basement and three storeys in height above a cellar, but in no case exceeding fifty-five feet in height, shall have the first storey above the cellar or lowest storey constructed fireproof. No such non-fireproof building shall exceed fifty feet in width.

Non-fireproof
buildings

Height

2. Every building hereafter erected or altered for use as an apartment house exceeding fifty-five feet in height shall be constructed fireproof in accordance with the requirements of this By-Law for fireproof buildings. When any such building exceeds one hundred feet in height it shall not be less than forty feet in width.

Fireproof
buildings

Height

Width

Cellar Stairs.

3. The stairs from the cellar or lowest storey to the floor next above, when placed within any apartment house shall be located, when practicable, to the rear of the staircase leading from the first storey to the upper storeys, and in all cases be enclosed with brick or stone or concrete walls, and such stairway shall be provided with self-closing fireproof doors at the top and bottom of said flight of stairs.

Location when
practicable

4. When such stairway is placed underneath the first storey staircase, it shall be constructed fireproof and be roofed over with fireproof material, and be also enclosed with brick walls, with self-closing fireproof doors at the top and bottom of said flight of stairs.

When placed
underneath
the first storey
staircase

5. When the stairs from the first storey to the cellar or lowest storey are located in an open court, the door leading thereto from the first storey may be placed underneath the staircase in the first storey, and the strings and railing of such outside stairs shall be of iron, stone or concrete, and if the stairs be enclosed from the weather, incombustible material only shall be used for that purpose.

When cellar
stairs are
located in
open court

Commencing
hallway to
the street

6. In all non-fireproof apartment houses hereafter erected four storeys and basement in height, but not exceeding fifty-five feet in height, and then occupied or arranged to be occupied by more than two families on any floor. The staircase halls shall be enclosed with brick walls and the said hall enclosures shall have connecting hallway in first storey and extend to the street enclosed with suitable walls of brick or such other fireproof materials, including ceiling, as has the approval of the Commissioners of the City of Edmonton.

Fireproof
building, halls
enclosed

7. In fireproof apartment houses hereafter erected the stair halls and hallway leading to the street shall be enclosed in brick walls and in other respects be constructed as required by this By-Law for fireproof construction.

When eight
inch brick
walls may be
used as
enclosures

8. Eight inch brick walls not exceeding fifty feet in their vertical measurements the enclosing said halls and stairs to be used as bearing walls where the distance between the outside bearing walls does not exceed thirty-three feet, and the area between the said brick enclosure walls does not exceed one hundred and eighty superficial feet.

Stairs to
extend to
roof

Bulkhead
doors not to be
locked

9. At least one flight of all stairs in each of the said buildings shall extend to the roof, and there be enclosed in a bulkhead. The bulkhead door shall not at any time be locked with a key. But it may be fastened on the inside by movable bolts or hooks.

To support
above entrance
wall

10. Whenever the walls enclosing the entrance hall of any apartment house hereafter erected support beams or girders carrying a brick wall above, the said walls shall not be less than twelve inches thick laid in cement mortar.

Closet prohibited under first storey staircase.

Open space

11. No closet shall be constructed underneath the staircase of any storey but the space there under shall be left entirely open and shall be kept free from encumbrance, but this shall not prohibit the enclosing without the openings the under portion of the first storey staircase from the foot of the same to a point where the height from the floor line to the soffit of the staircase shall not exceed five feet.

Space that may
be tightly
enclosed

Percentage of Lot Occupied.

- | | |
|--|--|
| 12. No apartment house hereafter erected shall occupy more than ninety per centum of a corner lot. | Corner lots |
| 13. Of more than seventy per centum of any other lot. | Inside lots |
| 14. Provided that the space occupied by outside fire escapes projecting not more than four feet shall not be deemed a part of the lot occupied. | Fire escape space |
| 15. For the purposes of this section the measurements shall be taken at the ground level. | Where measurements to be taken |
| 16. Except that where any such building as a store on the first storey and that storey is or is intended to be occupied for business purposes only the measurements as to percentage of lot occupied may be taken at the level of the second storey floor beams. | When measurements at second storey floor level |

Yards.

- | | |
|---|---|
| 17. Behind every apartment house four storeys in height hereafter erected on an inside lot there shall be a yard not less than ten feet in depth extending across the entire width of the lot and at every point open from the ground to the sky unobstructed except that fire escapes or unenclosed outside stairs may project not over four feet from the rear line of the house. | Inside lots

Open and unobstructed at rear of lot |
| 18. Said yard shall be increased in depth six inches for every additional storey in height of the building. | Increased depth |
| 19. And may be decreased in depth for every storey in height of the building less than four storeys. | Decreased depth
Corner lots |
| 20. The depth of the yard behind every apartment house hereafter erected upon a corner lot shall be not less than five feet in every part of the full width of the lot and such depth need not be increased when the building exceeds four storeys in height, nor shall it be decreased in depth when the building is less than four storeys in height except that. | Width of the yard |

When yard
may start at
second storey

21. Where an apartment house is hereafter erected on a corner lot when any such building has a store on the first storey the said yard or open space unencumbered except by fire escapes projecting not more than four feet may start at the level of the second storey floor beams.

Corner lot
width of
fifty feet

22. Where a corner lot is more than fifty feet in width the yard of that portion in excess of fifty feet shall conform to the provisions of this section for inside lots.

Lot extending
from street to
street

23. When an apartment house hereafter erected is upon a lot which runs through from one street to another street the said lot is not less than seventy feet, nor more than one hundred and twenty feet in depth, there shall be a yard space through the centre of the lot midway between the two streets which space shall extend across the full width of the lot, and shall never be less than twelve feet in depth from wall to wall, and such yard space may start at the level of the second storey floor beams.

When through
lot exceeds
certain
dimensions

24. Where such lot is over one hundred and twenty feet in depth, such yard space shall be proportionately increased in depth, and left through the centre midway between the two streets, and shall extend through the entire width of the lot.

Lot at
intersection
of two streets

25. When an apartment house hereafter erected is situated on a lot formed by the intersection of two streets at an acute angle the yard of the said house need not extend across the entire width of the lot provided that it extends to the point in line with the middle line of the block.

Courts.

Uncovered

26. A court that is an open unoccupied space other than a yard of an apartment house hereafter erected shall not be covered by a roof or skylight, but every such court shall be at every point open from ground to the sky unobstructed other than by fire escapes.

Outer Courts.

Width for

27. When one side of an outer court that is a court extending to the street or yard is situated on the lot

line the width of the said court measured from the lot line to the opposite wall of the building for apartment houses four storeys and basement in height shall not be less than four feet in any part.

28. And for every additional storey such width shall be increased six inches throughout the entire height of said court. Increased width

29. And for every storey of decrease in height of the said building below four storeys and basement, such width may be decreased one foot. Decreased width

30. Where an outer court is situated between wings of part of same building or between different buildings on the same lot the width of the said court measured from wall to wall for apartment houses four storeys and basement in height shall not be less than eight feet in any part. Width when between wings

31. For every storey of increase above four storeys and basement in the height of the said building, such width shall be increased six inches throughout the entire height of the said court. Increased width

32. For every storey of decrease in the height of the said building below four storeys and basement such width of the said court may be decreased one foot. Decreased width

Inner Court.

33. When one side of the inner court that is a court not extending to the street or yard is situated on the lot line, the width of the said court measured from the lot line to the opposite wall of the building for apartment houses four storeys and basement in height shall not be less than six feet in any part and its other horizontal dimensions shall not be less than twelve feet in any part. Court on lot line

34. And for every storey of increase in height of the said building above four storeys and basement, such width shall be increased six inches throughout entire height of said court. Increased width

35. And the other horizontal dimensions shall be increased one foot throughout the entire height of said court. Increased length

Decreased
width

36. And for every storey of decrease in the height of the said building below four storeys and basement such width may be decreased six inches throughout the entire height of the said court.

Decreased
length

37. And the other horizontal dimensions may be decreased one foot.

Inner court on
other than
lot line

38. Where an inner court is not situated upon the lot line, but is enclosed on all four sides the least horizontal dimension of the said court for apartment houses four storeys and basement in height shall not be less than twelve feet.

Increased
dimensions

39. And for every storey of increase above four storeys and basement in the height of the said building the said court shall be increased one foot in each horizontal dimension throughout the entire height of the said court.

Decreased
dimensions

40. And for every storey of decrease in the height of the said building below four storeys and basement the horizontal dimensions of the said court shall be decreased six inches in each direction.

Width of
offset and
recesses

41. No windows, except windows of water closets, compartments, bath rooms or halls shall open to any offset or recess less than six feet in width.

Outer and Inner Courts.

Angles with
windows

42. Nothing contained in this section concerning outer and inner courts shall be constructed as preventing windows at the angles of said courts.

When courts
starts at second
storey

43. When an apartment house hereafter erected has a store on the first storey and that storey is or is intended to be occupied for business purposes only the outer and inner courts may start at a level of second storey floor beams.

Rear Apartment Houses.

Prohibited

44. No separate apartment house or other dwellings shall hereafter be erected upon the rear of a lot 50 feet or less in width, where there is an apartment house or other dwelling on the front of the said lot.

45. Nor upon the front of any such lot upon the rear of which there is such a house.

Buildings on Same Lot with Apartment Houses.

46. If any building is hereafter placed on the same lot with an apartment house, the space between the said buildings shall always be of such size and arranged in such manner as is prescribed for yards in rear of apartment houses. Space between

47. And no building of any kind shall hereafter be placed upon the same lot with an apartment house so as to decrease the minimum size of courts or yards as hereinbefore prescribed. Court or yard spaces

48. And if any of the apartment houses is hereafter erected upon any lot upon which there is already another building, it shall comply with all the provisions of this section, and in addition the space between the said buildings and the said apartment house shall be of such size and arranged in such manner as is prescribed in this section for inner courts, the height of the highest building on the lots to regulate the dimensions. Comply with this By-law
Highest building to regulate dimensions

Rooms, Lighting and Ventilation of.

49. In every apartment house hereafter erected every room except water closet apartments and bath rooms shall have at least one window opening directly upon the street or upon a yard or court. Window openings

Windows in Rooms.

50. In every apartment hereafter erected the total window area in each room except water closet, compartments and bath rooms, shall be at least one-tenth of the superficial area of the room. Window areas proportioned to room

51. And the top of at least one window shall not be less than seven feet six inches above the floor and upper half of it shall be made so as to open the full width. Height to top above floor

52. No such window shall be less than twelve feet in area between the stop beads. Area of window

Windows in Water Closet Compartments and Bath Rooms.

Size of windows 53. In every apartment house hereafter erected the total window area in the water closet compartments or bath rooms shall not be less than six square feet in area for each.

Windows, width of 54. And no such windows shall be less than one foot six inches in width measured between stop beads, and made to open.

Rooms, Size of.

Minimum 55. In every apartment house hereafter erected all rooms except water closet compartments and bath rooms shall be of the following minimum sizes:

One room least area for 56. In each suite of apartments there shall be at least one room containing not less than one hundred and twenty square feet of floor area.

Other rooms least area for 57. And each other room shall contain at least ninety square feet of floor area.

Height for ceiling 58. Each room shall be in every part not less than nine feet high from finished floor to finished ceiling.

Attic room 59. Provided that an attic room need be nine feet high in but one half of its area.

Alcoves.

60. Alcove rooms must conform to all requirements of other rooms.

Public Hallways.

Windows required 61. In every apartment house hereafter erected exceeding three storeys and basement in height every public hallway that is a corridor not within an apartment shall have at least one window opening directly upon a street or upon a yard or court.

Width and height for windows 62. One at least of the window to light each public hallway or part thereof shall be at least two feet six inches wide and five feet high measured between stop beads.

63. Any parts of the hallway which is shut off from any other part of said hallway by a door or doors shall be deemed a separate hall or separate hallway within the meaning of this section.

Measuring of
hall

64. In every apartment house hereafter erected not exceeding three storeys and basement in height where the public hallway is not provided with a window opening directly to the outer air sash doors admitting light to public hallways from the apartments shall be provided.

Three stories
in height

Sash doors

Stair Hallway Windows.

65. In every apartment house hereafter erected exceeding three storeys and basement in height the aggregate area of windows to light or ventilate stair halls, that is, the public hallways which include the stairs, stair landings and those portions of the hallway through which it is necessary to pass in going between the entrance floor and the roof, shall be at least eighteen square feet for each floor.

Aggregate area

66. There shall be provided for each storey at least one of said windows, which shall be at least two and a half feet wide and five feet high, measured between the stop beads.

Size of window

67. A sash door shall be deemed the equivalent of a window in public hallways and stair halls, provided that such door contains the amount of glazed surface prescribed for such windows.

Sash door
equivalent to
window

Privacy.

68. In every apartment of three or more rooms in an apartment house hereafter erected, access to every living room and bedroom, and to at least one water closet compartment shall be had without passing through any bedroom.

Access c
rooms

Existing Buildings.

69. No now existing apartment house shall hereafter be enlarged, or its lot be diminished, so that the house shall occupy more than the percentage of lot allowed by this Section for similar new houses.

Percentage
of lot

Yards

70. No now existing apartment house shall hereafter be enlarged or its lot be diminished, so that the yard shall be less than specified in this Section for similar new houses.

**Open space
excepting fire
escapes**

71. And such yard shall be at every point open from the ground to the sky, except that fire escapes or unenclosed outside stairs may project not over four feet from the rear line of the house.

**Additional
rooms and
halls**

72. Any additional room or hall that is hereafter constructed or created in a now existing apartment house shall comply in all respects with the provisions of this Section for new houses.

Lights in Public Hallways.

Artificial light

73. In every apartment house a proper light shall be kept burning by the owner in the public hallways, near the stairs, upon the entrance floor, and upon the second floor above the entrance floor of said house, every night from sunset to sunrise throughout the year.

**Hours
prescribed**

74. And upon all other floors of the said house from sunset until ten o'clock in the evening.

Skylights.

**Area of glazed
surface**

75. In every apartment house there shall be in the roof, directly over each stair well, a ventilating skylight with both ridge ventilators and fixed louvres, the glazed surface thereof to be not less than twenty square feet in area, of one-quarter inch glass in metal frames, and with screens over and under the glass.

**Bulkhead
windows**

76. Provided, that this requirement shall not apply to a now existing apartment house now having a bulkhead in the roof over the main stairs, which bulkhead is provided with windows made so as to readily open, and with not less than twelve square feet of glass in the top of said bulkhead.

Chimneys or Fireplaces.

77. In every apartment house there shall be adequate chimney or vent flues running through every floor with proper openings or registers connecting with every suite or apartment.

Area for Vent Shafts.

78. Every vent shaft hereafter constructed in an apartment house four storeys and basement in height shall be at least twelve square feet in area, and the least dimensions of such shaft shall be not less than three feet; Area of least dimensions

79. And if the building be above four storeys and basement in height such shaft shall throughout its entire height be increased in area two square feet for each additional storey in height. Increase of area

80. And for each storey in height less than four storeys and basement, such shaft may be decreased in area one square foot. Decrease of area

81. A vent shaft may be enclosed on all four sides, but shall not be roofed or covered over in any way. Uncovered

Bottoms of Shafts, Areas and Yards.

82. In every apartment house hereafter erected the bottom of all shafts, courts, areas and yards which extend to the basement for light or ventilation of living rooms, shall be six inches below the floor level of the part occupied or intended to be occupied. Depth below floor level

83. All shafts, courts, areas and yards shall be properly concreted, graded and drained, and shall be properly connected with the street sewer so that all water may pass freely into it.

Basement and Cellars.

84. In apartment houses hereafter erected no room in the cellar or in the basement shall be constructed, altered, converted or occupied for living purposes unless all of the following conditions are complied with: Conditions for occupancy

85. (1) Such room shall be at least eight feet high in every part from the floor to the ceiling. Height of ceiling

86. Provided, that in buildings already erected and not now used as apartment houses, but hereafter altered or converted to such use, such room shall be not less than seven feet high in every part. Existing building

Ceiling above ground 87. (2) Ceiling of such room shall be at least two feet and six inches above the surface of the street or ground outside of or adjoining the same.

Water closet 88. (3) There shall be appurtenant to such room the use of a separate water closet, constructed and arranged as required by this Section for Water Closet Compartments.

Window openings 89. (4) Such room shall have a window or windows opening upon the street, or upon a yard or court. The total area of windows in such room shall be at least one-eighth of the superficial area of the room, and one-half of the sash shall be made to open the full width, and the top of each window shall be within six inches of the ceiling.

Walls damp-proof 90. (5) All walls surrounding such room shall be damp-proof.

Floor waterproof 91. (6) The floor of such room shall be damp-proof and water-proof.

Damp-proof and waterproof 92. Every apartment house hereafter erected shall have all walls below the ground level and all cellar or lower floors damp-proof and water-proof.

Below ground level 93. When necessary to make such walls and floors damp-proof and water-proof, the damp-proofing and water-proofing shall run through the walls and up the same as high as the ground level, and shall be continued throughout the floor.

Cellar floor construction 94. And the said cellar or lowest floor shall be properly constructed so as to prevent dampness or water from entering.

Water Closet Accommodations.

Separate water closets 95. In every apartment house hereafter erected there shall be a separate water closet in a separate compartment within each apartment.

Exception 96. Provided that where there are apartments consisting of but one or two rooms, there shall be at least one water closet for every three rooms.

97. Every apartment house hereafter erected shall be provided with as many water closets, or other similar receptacles, as required by the Plumbing Regulations of this By-Law, but in no case shall there be less than one for every fifteen occupants.

Number of
water closets,
privy sinks,
etc.

98. Nothing in this Section in regard to the separation of water closet compartments from each other shall apply to a general toilet hereafter placed in any apartment house provided such water closets are supplemental to the water closet accommodations required by this Section for the use of the occupants of any said house.

General toilet
room

99. All water closet compartments in every apartment house hereafter erected shall have a window opening upon the street or yard or upon a court or vent shaft.

window
openings

100. Every water closet compartment shall be provided with proper means of lighting the same at night. If fixtures for gas or electricity are not provided in said compartment, then the door of said compartment shall be provided with obscured glass panels, or with an obscured glass transom, not less in area than four square feet.

Sash door or
transom

101. The floor of every water closet compartment shall be made water-proof with asphalt, tile, stone, Portland cement, concrete, metal or some other water-proof material; and such water-proofing shall extend at least six inches above the floor, so that the said floor can be washed or flushed out without leaking.

Floors

102. No drip trays shall be permitted.

Drip trays
prohibited

103. No water closet fixtures shall be enclosed with any woodwork.

Woodwork
prohibited

Storage of Dangerous Materials.

104. No apartment house, nor any part thereof, shall be used as a place of storage for any article or material dangerous to life or health, nor for the storage of feed, hay, straw, excelsior or cotton, nor for the storage or handling of rags, except under such conditions as may be prescribed by the Fire Department, under authority of a written permit issued by said Department.

Articles
dangerous to
life or health

Conditions

Dangerous Businesses.

Bakeries and
fat boiling

Certain
openings
prohibited

105. No bakery and no place of business in which fat is boiled shall be maintained in any apartment house which is not fireproof throughout, unless the ceiling and side walls of the said place where fat boiling is done, or baking ovens are used, are made safe by fireproof materials around the same, and there shall be no openings either by door or window, dumb-waiter shafts or otherwise, between said bakery or said place where fat is boiled in any apartment house and the other parts of said building.

Openings into
halls from
drug stores,
etc.

106. All transom and windows opening into halls from any portion of apartment house where paint, oil, spirituous liquors or drugs are stored for the purpose of sale or otherwise, shall be glazed with wire glass in metal frame or they shall be removed and the opening shall be closed up as solidly as the rest of the wall, and all doorways leading into any such hall from such portion of said house shall be protected with standard fire-doors.

Fire-Escapes.

Allowed
projection for

107. In all apartment houses any apartment not containing any room fronting upon the street or yard shall have a fire-escape in a court, projecting not more than four feet from the wall of the house, constructed in accordance with requirements of Section 104 of this By-Law.

Location for
fire escapes

108. In any buildings each and every apartment therein above first storey shall open directly to an outside fire escape from at least one room other than a bath-room or water closet compartment, and shall not include a window of a stair hall.

PART VIII.

VAULTS, AREAWAYS AND CELLARS.

SECTION 54.

Cellars to be Connected with Sewers.

Street sewer
connection

1. Before the walls of buildings are carried above the foundation walls the cellar shall be connected with the street sewers.

2. Should there be no sewer in the street, or if the cellars are below water level, or below the sewer level, then provision shall be made by the owner to prevent water accumulating in the cellars to the injury of the foundations.
- When no sewer
in street

SECTION 55.

Vaults under Sidewalks.

1. In buildings where the space under the sidewalks is utilized a sufficient stone, concrete, or brick wall, or brick arches between iron or steel beams, shall be built to retain the roadway of the street, and the side, end or party walls of such building shall extend under the sidewalk, of sufficient thickness, to such wall.
- Walls of vaults

SECTION 56.

1. The roofs of all vaults shall be of incombustible material.
- Vault roofs

SECTION 57.

Cellar Floors.

1. The floor of the cellar or lowest storey in every dwelling house, except those outside the first and second class fire limits, which do not exceed \$2,000 in value, apartment house, lodging house, hotel, apartment hotel, workshop, factory, school, church, hospital and asylum hereafter erected—
- Applicable to
certain
buildings
2. Shall be concreted not less than four inches thick.
- Concreted
3. Where wood floors are to be laid in such cellars or lowest storeys, the sleepers shall be placed on top of the concrete.
- Placing of
sleepers

SECTION 58.

Cellar Ceilings.

1. The ceiling over every cellar or under lowest floor of every residence building, whether occupied by one or more families, hereafter erected when the floor construction is of wood, where there is no furnace room, shall be plastered at least three feet outside the area of the furnace and also over the smoke pipe three feet on each side to the chimney and the edges of the plaster fire stopped to the flooring.
- When beams
are of wood

SECTION 59.

Wood Beams.

Separation
of beams

1. All wood beams and other timbers in any wall of a building built of stone, brick, concrete or iron, shall be separated from the beam or timber entering the opposite side of the wall by at least eight inches of solid masonry work; such separation may be obtained by corbelling or by staggering the beams.

Minimum Thickness for Wood Beams.

Least thickness
for floor and
roof beams

2. No wood floor beams or wood roof beams used in any building, hereafter erected, shall be of a less thickness than two inches, nor less depth than ten inches, for spans not exceeding twelve feet, beams not less than two inches by eight may be used with the approval of the Building Inspector.

Trimmer and Header Beams and Tail Beams.

Properly
proportioned

3. All wood trimmer and header beams shall be proportioned to carry with safety the loads they are intended to maintain.

Framing

4. The ends of all tail beams shall be properly framed into the header beams.

Stirrups Irons.

For wood
headers more
than four feet
in length

5. Every wood header beam more than four feet long, used in any building, shall be suitably framed and be hung to the trimmer beams in stirrup-irons of proper thickness for the size of the timbers.

Stirrups for
tail beams

6. When it is not practicable to frame the ends of tail beams into header beams, the ends of the tail beams shall be hung to the header beams by stirrup-irons of proper size and strength.

Bearings for Wood Beams.

Ends to rest on
walls or girders

7. Every wood beam, except header beams, shall rest at one and four inches in the wall, or upon a girder as authorized by this By-Law, unless the wall is properly corbelled out four inches, in which case the brickwork or corbelling shall extend to the top of the floor beams.

Bevel Ends for Wood Beams.

8. The ends of all wood floor and roof beams, where they rest on brick walls, shall be cut to a bevel of three inches on their depth. When resting on brick walls

Ends of Beams Not to Rest on Stud Partitions.

9. In no case shall either end of a floor or roof beam be supported on stud partitions, except in frame buildings. Exception for frame buildings

Cross Bridging for Beams.

10. All wood floor and wood roof beams shall be properly bridged with cross bridging, and the distance between bridging or between bridging and walls shall not exceed eight feet. Distance apart for bridging

Beams Near Flues.

11. All wood beams shall be trimmed away from all flues and chimneys whether the same be a smoke, air or any other flue or chimney. The trimmer beam shall be not less than twelve inches from the inside face of a flue and four inches from the outside of a chimney breast, and the header beam not less than two inches from the outside face of the brick or stone work of the same. Distance from flues

12. For the smoke flues of boilers and furnaces where the brickwork is required to be more than eight inches in thickness, the trimmer beam shall be not less than four inches from the outside of the brickwork, and the header beam shall be not less than two inches from the outside of the brickwork. Distance from boiler and furnace flues

13. The header beam, carrying the tail beams of a floor, and supporting the trimmer arch in front of a fireplace, shall be not less than twenty inches from the chimney breast. Distance of header beam from chimney breast

To Calculate Safe Distributed Load on Wood. Floor Beams.

14. The safe carrying capacity of wood beams for uniformly distributed loads shall be determined by mul- Formula

tipling the area in square inches by its depth in inches and dividing this product by the span of the beam in feet. This result is to be multiplied by—

Co-efficients

70 for tamarac.

90 for spruce and mountain fir.

140 for Coast or Douglas fir.

Short span
beams

15. The safe carrying capacity of short span timber beams shall be determined by their resistance to shear in accordance with the unit stresses fixed by Section 138 of this By-Law.

SECTION 60.

Anchors and Straps for Wood Beams and Girders.

Wall anchors

1. Each tier of beams shall be anchored to the side, front, rear or party walls at intervals of not more than six feet apart, with good, strong, wrought-iron anchors of not less than one and a half inches by three-eighths of an inch in size, well fastened to the side of the beams by two or more nails made of wrought iron at least one-fourth of an inch in diameter.

Girder Straps and Anchors.

Anchored to
walls and
strapped at
joints

2. Where the beams are supported by girders, the girders shall be anchored to the walls and fastened to each other by suitable iron straps.

Examples.

What will be the uniformly distributed safe load in pounds, according to the above requirements, for a spruce beam 3 inches by 10 inches—20 foot span?

Area	Depth		Co-effi- cient	Safe Distributed Load
3" x 10 x 10"		Result and this	15 x 90	— 1,350 lbs.
	20 ft.			
	span			

3. What will be the uniformly distributed safe load in pounds, according to the above requirement, for a Douglas fir beam, 4 inches by 12 inches—22 foot span?

Area	Depth		Co-effi- efficient	Safe Distributed Load
4×12	12×12	Result and this	26×140	— 3,668 lbs.
22 ft.				
span				

Beam Straps.

4. Or they may abut the sides of girders, if properly supported and secured thereto, without cutting away any portion of the underside of same and be strapped by wrought iron straps of the same size and distance apart, and in the same beam as the wall anchors, and shall be fastened in the same manner as said wall anchors.

Beams butted
and strapped

5. Or they may lap each other at least twelve inches and be well spiked or bolted together where lapped.

When lapped
to be spiked

6. Every pier and wall, front or rear, where the beams are placed parallel thereto, shall be anchored every eight (8) feet to the beams of each story, with the same size anchors as are required for side walls, which anchors shall hook over the fourth beam and be secured to the intervening beams.

Front and rear
piers to be
anchored

SECTION 61.

Wood Columns and Plates.

1. All timber columns and posts shall be squared at the ends at right angles to their axis.

Square ends

2. To prevent the unit stresses from exceeding those fixed in this By-Law, timber or iron or steel cap and base plates shall be provided.

Cap and base
plates

3. Where the cap plates of a wood post supports a wood girder and directly on top of the girder is an iron base plate of the wood post above, the said cap and base plates shall be connected by pintles of metal passing through the girder; these pintles may be of round bars of wrought iron or steel of proper size and not less than four in number, or an oval-shaped hollow cast-iron pintle of proper thickness may be used, in each case adequate to transmit the load.

Pintles

Check plates 4. Additional iron or steel check plates shall be placed between the cap and base plates and bolted to the girders when required to transmit the loads with safety.

5. Any cap and base plate construction having the approval of the Commissioners of the City of Edmonton may be used.

SECTION 62.

Timber for Trusses.

In compression 1. When compression members of trusses are of timber they shall be strained in the direction of the fibre only.

In tension 2. When timber is strained in tension, it shall be strained in the direction of the fibre only.

Struts in pin-connected trusses 3. The working stress in timber struts of pin-connected trusses shall not exceed 75 per cent. of the working stresses established in Section 138 of this By-Law.

Bolts and Washers for Timber Work.

Washers 4. All bolts used in connection with timber and wood beam work shall be provided with washers of such proportions as will reduce the compression on the wood at the face of the washer to that allowed in Section 138 of this By-Law, supposing the bolt to be strained to its limit.

SECTION 63.

Mill Construction, Definition of.

Walls 1. The term "Mill Construction" shall apply to buildings, without hollow or concealed spaces, having brick walls not less than twelve inches in thickness for the top storey and increasing in thickness according to Section 32 of this By-Law; roofs to be of two inch tongued and grooved planking spiked directly to heavy roof timbers not less than six inches in the least dimension, covered with metal or other approved incum-

tible roof covering, which has the approval of the Commissioners of the City of Edmonton. Floors to be sold without openings, constructed of not less than three-inch spliced planking covered with one inch top flooring laid crosswise or diagonally, properly nailed. Between the top flooring and the planking shall be placed not less than two thicknesses of waterproof material carefully laid to break joints and flashed at least three inches around all walls, posts or columns and openings with mouldings or mopboards. Size and spacing of floor timbers shall be suitable for the load to be carried, but the timbers shall in no case be less than eight inches in the least dimension, and shall rest on top of girders or on iron or steel plates in the walls.

Roof

Floors

Waterproof materials

Floor timbers

Girders shall rest on iron or steel plates in the walls and on iron or steel caps on columns, so arranged as to be self-releasing.

2. All columns and posts shall rest on pintels and the size and spacing thereof shall be suitable for the load to be carried, but no column or post shall be less than eight inches in the least dimension. Columns, girders and beams if of wood, shall be of solid material, and if of iron or steel shall be protected as called for in Section 108 of this By-Law.

Posts

Floor openings

All elevators, stairs, belts, pipes, shaftings and vents piercing floors shall be enclosed in towers having brick walls not less than eight inches in thickness, or reinforced concrete walls not less than six inches in thickness, and all openings therein shall be protected by standard automatic self-closing fire doors.

PART X.

CHIMNEYS, FLUES, FIREPLACES AND HEATING PIPES.

SECTION 64.

Trimmer Arches.

1. All fireplaces and chimneys breasts where mantels are placed whether intended for ordinary fireplace uses or not, shall have trimmer arches to support hearths.

To support hearths

- Width of trimmer arches. 2. And the said arches shall be at least twenty inches in width, measured from the face of the chimney breast, and they shall be constructed of brick, stone, burnt clay or concrete.
- Length of trimmer arches. 3. The length of a trimmer arch shall be not less than the width of the chimney breast or hearth.
- Wood centres under trimmer. 4. Wood centres under trimmer arches shall be removed before plastering the ceiling underneath.
- Mantels. 5. All fireplaces and hearth shall be built of incombustible materials.
- Woodwork back of a summer piece. 6. No wood mantel or other woodwork shall be exposed back of a summer piece; the iron work of the summer piece shall be placed against the brick or stone work of the fireplace.
- Fire boards. 7. No fireplace shall be closed with a wood fire board.

SECTION 65.

Chimneys, Flues and Fireplaces.

- Joints struck smooth. 1. All fireplaces and chimneys in stone or brick walls in any building hereafter erected, except as herein otherwise provided, and any chimney or flues hereafter altered or repaired, without reference to the purpose for which they may be used, shall have the joints struck smooth on the inside, except when lined on the inside with well-burnt clay or terra-cotta pipe.
- Parging of flues prohibited. 2. No parging mortar shall be used on the inside of any fireplace, chimney or flue.
- Fireplace backs, thickness for. 3. The fire-backs of all fireplaces hereafter erected shall be not less than eight inches in thickness, of solid brickwork, nor less than twelve inches if of stone.
- Lining behind grate in fireplace. 4. When the grate is set in the fireplace, a lining of fire brick, at least two inches in thickness, shall be added to the fire-back, unless soap stone, tile or cast iron is used, and filled solidly behind with fireproof material.
- Thickness for smoke flues of boilers, furnaces, etc. 5. The brickwork of the smoke flues of all low pressure boilers, furnaces, bakers' ovens, large cooking

ranges, large laundry stoves, and all flues used for a similar purpose shall be at least eight inches in thickness, and lined continuously on the inside with well-burnt clay or terra-cotta pipe, and shall be capped with terra-cotta, stone and cast iron.

Capped

6. The walls of all high pressure boiler flues shall be not less than twelve inches, and the inside four inches of such walls shall be of fire-brick, standing free from outer wall, laid in fire mortar, for a distance of twenty-five feet in any direction from the source of heat.

Inside of flues for boilers

7. All smoke flues of smelting furnaces or of steam boilers, or other apparatus which heat the flues to a high temperature, shall be built with double walls of suitable thickness for the temperature with an air space between the walls, the inside four inches of the flues to be of fire-brick, laid in fire mortar, for a distance of not less than twenty-five feet in any direction from the source of heat.

Smoke flues of steam boilers

8. All smoke flues shall extend at least three feet above a flat roof, and at least two feet above the highest point of a peak roof, parapet or fire wall.

Height of smoke flues

9. On dwelling houses and stables, three storeys or less than six of the top courses of a chimney shall be laid in pure cement mortar and the brick-work carefully bonded and anchored together in lieu of coping.

Tops of chimneys on three storey buildings

Chimney Flues to be Lined with Pipe.

10. In all buildings hereafter erected every smoke flue, except the flues hereinbefore mentioned, shall be lined continuously on the inside with well-burnt clay, or terra-cotta pipe, made smooth on the inside, from the bottom of the flue, or from the throat of the fireplace, if the flue starts from the latter, and carried up continuously to the extreme height of the flue. The ends of all such lining pipes shall be made to fit close together, and the pipe shall be built in as the flue or flues are carried up.

Smoke flues to be lined with cast iron or clay pipe

Ends of lining pipe to fit close

11. Each flue shall be enclosed on all sides with not less than eight inches of solid brick-work properly bond-

Brickwork

ed together, excepting only, that the withes or brick-work between the lined flues on the inside of the chimney may be four inches in thickness.

Area of smoke
flues

12. No smoke flue shall be less than eight by eight inches nor any furnace or laundry stove flue less than eight by twelve inches, exclusive of the thickness of the lining in each case.

Flues for gas
stoves

13. Flues for the use of gas stoves or gas grates may be of less dimensions within pipe or tile-lined flues, but no such flue shall be less than four inches clear inside diameter of the pipe or tile; this shall not prevent the placing together of not more than four such gas flues within an enclosure of brick-work of the thickness hereinbefore stated, including the lining of same.

Flues to Be Left Clean.

At completion
of building

14. All flues in every building shall be properly cleaned and all rubbish removed, and the flues left smooth on the inside upon the completion of the building.

SECTION 66.

Chimney Supports.

Forbidding
supports of
wood

1. No chimney shall be started or built upon any floor or beam of wood.

Corbeling

2. In no case shall a chimney be corbeled out more than eight inches from the wall, and in all such cases the corbeling shall consist of at least five courses of brick.

Piers support-
ing chimneys

3. Where chimneys are supported by piers, the piers shall start from the foundation on the same line with the chimney breast, and shall be not less than twelve inches on the face, properly bonded into the walls.

Unsafe
chimneys

4. All chimneys which shall be dangerous in any manner whatever, shall be repaired and made safe, or taken down.

SECTION 67.

Chimneys of Cupolas.

1. Iron cupola chimneys of foundries shall extend at least ten feet above the highest point of any roof within a radius of fifty feet of such cupola, and be covered on top with a heavy wire netting, and capped with a suitable spark arrester. Foundry cupolas
2. No woodwork shall be placed within two feet of the cupola. Distance from woodwork

SECTION 68.

Hot Air Flues, Pipes and Vent Ducts.

1. All hot air flues and shafts shall be lined with tin, galvanized iron or burnt clay pipes. Hot air flues to be lined
2. No wood casing, furring or lath shall be placed against or cover any smoke flue or metal pipe used to convey hot air or steam. Woodwork not to be placed against flues
3. No smoke pipe shall pass through any floor unless surrounded by six inches of concrete brick or stone. Forbidding smoke pipes through floors
4. No stove pipe shall be placed nearer than nine inches to any lath and plaster or board partition, ceiling or any woodwork. Stove pipes, " " distance from ceilings and partitions
5. Smoke pipes of laundry stoves, large cooking ranges, and of furnaces shall be not less than fifteen inches from any woodwork, unless they are properly guarded by metal shields; if so guarded, stove pipes shall be not less than nine inches distant. Metal shields
Distance
6. Where smoke pipes pass through a lath and plaster partition they shall be guarded by galvanized iron ventilated thimbles at least twelve inches larger in diameter than the pipes, or by galvanized iron thimbles built in at least eight inches of brickwork. Smoke pipes through partitions

Smoke Pipes Through Roofs.

7. No smoke pipe shall pass through the floor or roof of any building unless a special permit be first obtained Permit necessary

from the Building Inspector for the same. If a permit is so granted then the floor or roof through which the smoke pipe passes shall be protected in the following manner.

How protected 8. A galvanized iron ventilated thimble of the following dimensions shall be placed; in case of a stove pipe. The diameter of the outside guard shall be not less than 12 inches, and the diameter of the inner one 8 inches larger than the smoke pipe, and for all furnaces, or where similar large hot fires are used, the diameter of the outside guard shall be not less than eighteen inches, and the diameter of the inner one twelve inches larger diameter than pipe.

Thimbles 9. The smoke pipe thimbles shall extend from the under side of the ceiling or roof beams to at least nine inches above the roof, and they shall have openings for ventilation at the lower end where the smoke pipes enter, also at the top of the guards above the roof.

Smoke pipe of boiler through roof 10. Where a smoke pipe of a boiler passes through a roof, the same shall be guarded by a ventilated thimble, same as before specified, thirty-six inches larger than the diameter of the smoke pipe of the boiler.

Hot Air Pipes in Walls.

Covering of brick or stone 11. Tin or other metal pipes in brick or stone walls, used or intended to be used to convey heated air, shall be covered with brick or stone at least four inches in thickness.

Pipes for distribution of hot air 12. Where pipes are used for the distribution of hot air in buildings, such pipes must be made of metal and double, the space between the two metal pipes to be at least one-half inch: such pipes are to be made with air tight joints and be securely fastened to the partitions through which they pass, or in lieu thereof the pipes can be covered with two thicknesses of asbestos paper weighing not less than fourteen pounds per one hundred square feet.

Openings in floors for hot air registers 13. The openings in floors for hot air registers shall be surrounded with borders of incombustible material, not less than two inches wide, firmly and securely set in place. The register boxes shall be double, the distance the two thicknesses of tin being at least one inch,

or they can be single if covered with asbestos paper in a similar manner to that specified in the preceding paragraph for the pipes.

Hot Air Pipes in Closets.

14. Hot air pipes in closets shall be double, with a space of one inch between them.

Horizontal Hot Air Pipes.

15. Horizontal hot air pipes shall be placed not less than six inches below the floor beams or ceiling; if the floor beam or ceilings are plastered and protected by a metal shield, then the distance shall be not less than three inches.

Distance from
combustible
ceiling

Ducts for Ventilation.

16. Vent flues or ducts for the renewal of foul or vitiated air, in which the temperature of the air cannot exceed that of the rooms, may be constructed of iron, or other incombustible material, and shall not be placed nearer than one inch to any woodwork, and no such pipe shall be used for any other purpose.

Construction

17. In buildings of fireproof construction ventilating shafts passing through floors shall be constructed of fireproof material not less than one inch in thickness. Any opening in such ducts or shafts shall be protected by automatically closing fire-doors or by metal louvres riveted into metal frames, and such ducts shall open to the outside of the building.

Material and
thickness of
same in fire-
proof buildings

Vent Ducts in Public Schools.

18. In the support or construction of such ducts, if placed in a public schoolroom, no wood furring or other inflammable material shall be nearer than two inches to said flues and ducts, and shall be covered on all sides, other than those resting against brick, terra cotta, or other incombustible material, with metal lath plastered with at least two heavy coats of mortar, and having at least one-half inch air space between the flues or ducts and the lath and plaster.

How
constructed

SECTION 69.

Steam and Hot Water Heating Pipes.

Distance from
woodwork

1. Steam heating pipes shall not be placed within two inches of any timber or woodwork, unless the timber or woodwork is protected by a metal shield; then the distance shall not be less than one inch.

Through floors
how protected

2. All steam heating pipes passing through floors and ceilings or lath and plastered partitions shall be protected by a metal tube passing entirely through floor and ceilings or partitions one inch larger in diameter than the pipe, having a metal cap at the floor, and where they are run in a horizontal direction between the floor and ceiling, a metal shield shall be placed on the underside of the floor over them, and on the sides of wood beams running parallel with said pipes.

Wood enclosing
boxes to be
lined with
metal

3. All wood boxes or casings enclosing steam or hot water heating pipes and all wood covers to recesses in walls in which steam or hot water heating pipes are placed, shall be lined with metal.

Incombustible
pipes

4. All pipes or ducts used to convey air warmed by steam shall be of metal or other fireproof materials.

Pipe coverings

5. All steam pipe coverings shall consist of fireproof materials only.

Plumbing Pipes.

Passing
through floors

6. Cold water or other exposed plumbing pipes shall have the surrounding air space closed off at the ceiling and floor line of any floor through which any such pipe or pipes shall be carried.

PART XI.

GENERAL CONSTRUCTION.

SECTION 70.

Ducts for Pipes.

Of fireproof
material

1. All ducts for pipes, wires, and other similar purposes shall be enclosed on all sides with fireproof material.

2. And the opening through each floor shall be properly fire-stopped. Fire-stopped at each floor

3. Any door opening in such duct shall be provided with a self-closing fireproof door. Doors in ducts

4. If the area of such duct exceeds four square feet the thickness of the fireproof enclosure shall be not less than four inches, and shall extend by a proper fireproof outlet to and through the roof. Construction

SECTION 71.

Studded-Off Spaces.

1. Where walls are studded-off, the space between the inside face of the wall and the studding shall be fire-stopped with fireproof material placed on the underside of the wood beams above, for a depth of not less than four inches, and be securely supported; Fire-stopped on underside of beams above

2. Or the beams directly over the studded-off space shall be deafened with not less than four inches of fireproof material, which may be laid on boards cut in between the beams. Deafening between beams over the studded-off spaces

SECTION 72.

1. In any building hereafter erected, altered or repaired, the walls or ceilings of same shall not be covered with wood, sheathing or any other combustible material, except that the surface of the walls, partitions or ceilings behind such coverings shall be plastered flush with the grounds and down to the floor line, thereby solidly filling the space between the covering and the surface of the wall, partition or ceiling with incombustible material. Forbidding use wood for, in certain buildings

Attic or Cock Lofts in Peaked Roofs.

2. No part of any attic or cock-loft below or within the trusses or rafters of a pitched roof of any building other than a dwelling houses hereafter erected shall be so built as to provide an accessible place for the storage or placing therein of any article whatever. To be made inaccessible for storage purposes

Space above
suspended
ceiling not to
be used for
storage

3. If any portion of the roof trusses, rafters or beams of a pitched roof is ceiled or plastered, or a ceiling is suspended therefrom, to form a ceiling for the uppermost storey of a building, the space above such ceiling shall not be used for the storage or placing of any article whatever therein, and entrance to such space shall be made inaccessible.

Inclosed
vertical space
to reach
scuttle door

4. This, however, shall not prohibit a tightly enclosed vertical well-hole through such space to ascend to the scuttle door on the roof.

Storage
prohibited
trusses of roof
of existing
building

5. In any existing building it is hereby declared unlawful to use or occupy the space above the ceiling and within the trusses or rafters of a pitched roof for the storage or placing of any article whatever therein, nor shall any stove-pipe or smoke flue other than a brick chimney pass through any attic or cock loft.

SECTION 73.

Bay Oriel and Show Windows.

Projection
beyond
building line

1. No step or steps, porch, store or shop window, bay or oriel windows, signs or other structures shall encroach upon or project over the line of any street, lane or other public property, provided that after the height of twelve feet above the street grade, and then only on street sides, eighteen inches may be used for bay and oriel windows, balconies, belt courses and projections of a like nature, and three feet may be used for the main cornice surmounting the sub-structures, all of which shall be built of incombustible materials.

PART XII.

STAIRS AND ENTRANCES.

SECTION 74.

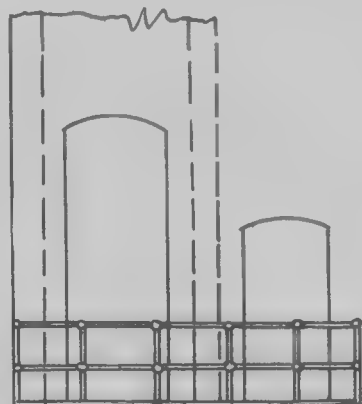
Entrance to Basement or Cellar.

Outside of
building

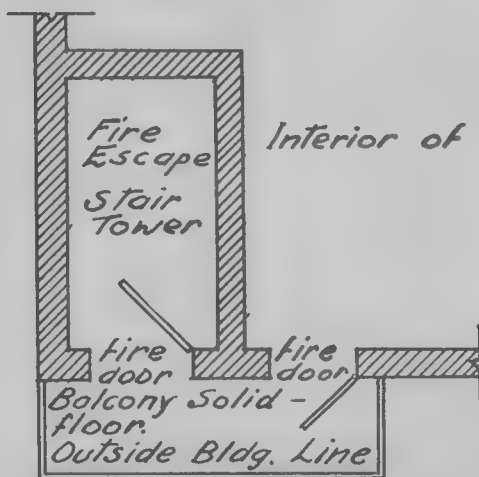
1. Every dwelling house arranged for or occupied by two or more families above the first storey, hereafter erected, shall be provided with an entrance to the basement thereof from the outside of such building.

*TOWER PLAN
WITH
OUTSIDE BALCONY ENTRANCE.*

*NO DIRECT COMMUNICATION
WITH BUILDING.*

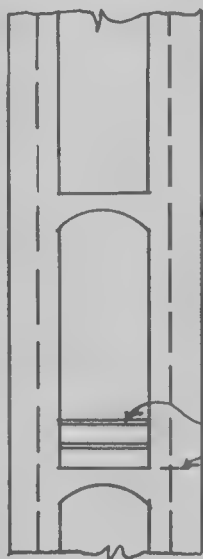


*Balcony Floor Supports
and rails fireproof*



PLAN OF STAIR TOWER WITH OUTSIDE VESTIBULE ENTRANCE.

NO DIRECT COMMUNICATION
WITH BUILDING.



Railing built into wall.
Floor line.



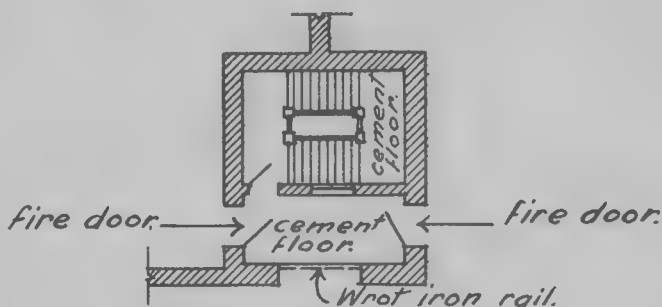
Interior of Bldg.

NOTE. In each case walls of brick or other approved material; built solidly from foundation to at least 36" inches above roof, unless building is fireproof. Stair Treads Etc. must be of fireproof material.

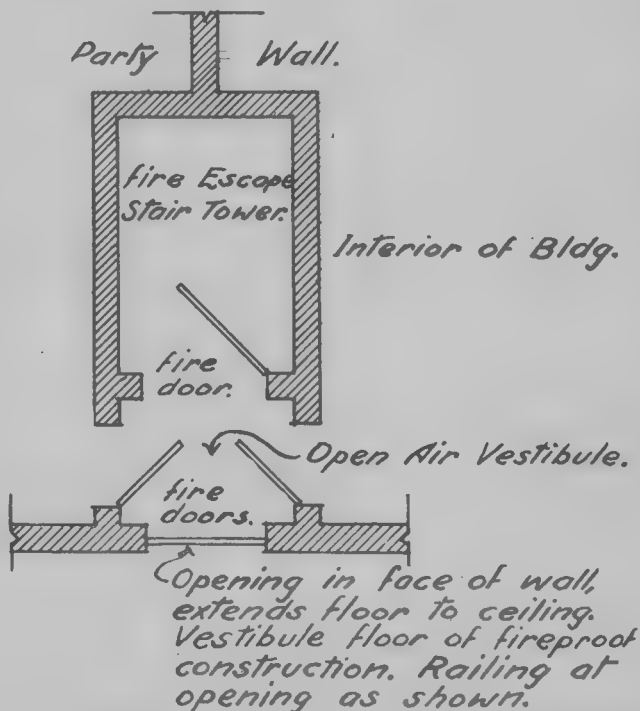
open fire door
Vestibule floor of fireproof construction.
Opening in wall extends floor to ceiling.

PLAN OF STAIR TOWER WITH
OUTSIDE ENTRANCE COMMON
TO TWO NEIGHBORING BUILDINGS.

NO DIRECT COMMUNICATION
WITH BUILDINGS.



— VESTIBULE ENTRANCE. —



SECTION 75.

Stairs, Number Regulated by Area of Building.

1. In any building of three storeys or over hereafter erected to be used as an office building, store, factory, hotel, lodging house or school, covering a lot area—

Description of building

2. Exceeding twenty-five hundred feet and not exceeding seventy-five hundred feet there shall be provided at least two continuous lines of stairs, one of which must be an enclosed fire tower stair terminating at the first floor and extending to the top floor with no interior windows except of wire glass in metal sash set stationary in metallic frames and all doors opening into such fire tower shall be isolated at each storey by a second door leading from the interior of the building to a balcony or said vestibule connected to the fire stair tower door: such windows to borrow light only directed from the outside.

Number according to area

All garages shall be separated from portions of the same building, when used for other purposes, by fire-proof walls, floors and ceilings.

3. And every such building shall have at least one continuous line of stairs for each additional seven thousand five hundred feet of lot area covered, or part thereof, in excess of that required for seven thousand five hundred feet in area.

Proportionately increased number

4. When any such building covers an area of lot greater than fifteen thousand feet the number of stairs shall be increased proportionately.

When area exceeds 15,000 feet

5. The width of the stairs required by this Section shall in no case be less than three feet six inches in the clear between hand-rails or between the hand-rail and an enclosed side of the stairs, and shall be increased in width when in the opinion of the Building Inspector an increased width is necessary for the safety of the occupants, up to five feet.

Width of stairs

6. All such stairs shall have treads of uniform width and risers of uniform height throughout in each flight, and the risers shall be not more than eight inches in height, and the treads, exclusive of nosings, not less than ten inches, winders prohibited.

Treads and risers

Landings 7. Each flight of stairs in every storey which exceeds a height of eleven feet in the clear shall have a proper landing introduced, and said landing shall be placed at the central portion thereof if the stairs be a straight run.

Railings 8. The stairs shall be provided with proper banisters or railings and hand-rails, and kept in good repair.

SECTION 76.

Engineers' Stationary Ladders.

As an outside exit 1. Every building in which boilers or machinery are placed in the cellar or lowest storey, shall have a stationary iron ladders or stairs from such storey leading direct to the lane.

SECTION 77.

Slate and Stone Treads of Stairs to be Supported.

1. In all buildings hereafter erected where the treads and landings of iron stairs are of slats, marble or other stone.

Plates under treads and landings 2. There shall be placed directly underneath each tread and each landing for their entire length and width, a wrought iron or steel plate made solid or having openings not exceeding four inches square in same, of adequate strength but in no case less than one-eighth of an inch in thickness, and in each and every case securely fastened to the strings, with bolts or rivets, or to both the strings and risers if the treads be more than three and one-half feet long, so that said plates shall in themselves furnish a safe passage-way independent of the slate, marble or other stone placed thereon.

When supplementary plates are not required 3. If stairs are constructed of other fireproof material than iron, and the slate, marble or other stone treads and landings are each solidly supported for their entire length and width by the materials composing such stairs, iron support plates shall not be required.

PART XIII.

SKYLIGHTS AND FLOOR-LIGHTS.

SECTION 78.

Metal Skylights.

1. The term "skylight" shall be taken to mean and include flat, hipped, lantern, monitor, turret, dome, vertical or pitched saw-tooth construction, and all other covers placed over openings on roofs for the admission of light.

Meaning of
term

2. All skylights placed on or in any building, shall have the frames and sash thereof constructed of metal and glazed.

Metal frames
and sashes

3. All openings in roofs for the admission of light other than elsewhere provided in this By-law over elevator, stair, dumb-waiter shafts, and theatre stage roofs, shall have metal frames and sash, glazed with wire glass not less than one-quarter inch thick, or with glass protected above and below with wire screens, of not less than No. 12 galvanized wire, and not more than one-inch mesh.

Wire glass or
protected glass

Skylights Over Public Passage-ways.

4. Skylights hereafter placed in buildings of a public character over any passage-way or room of public resort, shall have immediately underneath the glass thereof a wire netting, unless wired glass is used.

Wire netting or
wired glass

Floor-Lights.

5. All openings in floors for transmission of light to floors below shall be covered over with floor lights constructed of metal frames and bars, the glass in no case to be less than three-quarters of an inch in thickness.

Construction
for

6. If any glass in same measures more than sixteen square inches, the glass shall be provided with strong wire netting under the same.

Wire netting or
wired glass

SECTION 79.

Unprotected Openings in Floors and Roofs.

solid covering
or inclosure

1. No opening in any floor or roof shall be without a solid covering or an inclosure, as provided in this By-law, to prevent the communication of fire from storey to storey, excepting as otherwise provided in this By-law for certain staircase openings which are not required to be enclosed.

PART XIV.

ENCLOSURE AND SHED COVERING FOR THE
PROTECTION OF PEDESTRIANS.PROTECTION OF PERSONS EMPLOYED IN
BUILDING.

SECTION 80.

Shed Coverings

Shed over
sidewalk when
building
exceeds 55 feet
in height

1. Whenever buildings shall be erected or increased to three or more storeys in height, upon or along any street, the owner, builder or contractor constructing or repairing such buildings shall, after entering into an agreement with the City and giving a bond to an amount of not less than one thousand dollars, have erected and maintained during such construction or repair, a shed over the sidewalk in front of said premises, extending from building line to curb, the same to be properly, strongly and tightly constructed, so as to protect pedestrians and others using such streets and be properly lighted with red lights at each end and same shall be kept continuously burning from sunset to sunrise.

Outside Scaffolds.

When building
exceeds 85 feet
in height

2. Whenever outside scaffolds are required to carry on the construction of buildings over eighty-five feet in height, whether the same be constructed by poles or thrust-out scaffold, there shall be erected on its outer edge and ends an enclosure of wire netting of not over two inch mesh, or of boards not less than three-fourths

of an inch thick, placed not over one and one-half inches apart, well secured to uprights not less than two inches by four inches, fastened to planks or timbers, and resting on put-logs or thrust-outs. The said enclosure shall be carried up at least five feet in advance above the level on which the workmen employed on said front are working. The said thrust-outs shall be not less than three by ten of spruce or fir, and to be doubled or tripled, as may be required for the load to be carried, and to be thoroughly braced and secured; or said timbers can be in one stick if proportioned to the load. The flooring on thrust-outs and put-logs shall be tightly constructed with plank. This said floor and enclosure shall not be removed until a like floor and enclosure is already prepared and in position on the storey above.

Inclosure to be higher than level on which work is progressing

Flooring of scaffold

When to be removed

Window Openings Enclosed.

3. In all buildings over forty feet in height, during construction or alteration the windows on each floor above the second shall be properly enclosed as soon as the storey is built.

When building exceeds 85 feet in height

Protection of Adjoining Skylights and Roofs.

4. If the walls of such buildings are carried up two storeys or more above the roofs of adjoining buildings, proper means shall be provided and used for the protection of skylights and roofs of such adjoining buildings.

If building is two or more stories higher adjoining building

5. The protection over skylights shall be of stout wire netting not over one inch mesh on stout timbers and properly secured.

Wire netting

Sheds and Enclosures Subject to Inspection.

6. All such sheds and enclosures are to be subject to the inspection and approval of the Building Inspector.

When Adjoining Owner Refuses Permission to Protect Roofs and Skylights.

7. Should said adjoining owner, tenant or lessee refuse to grant permission to have said roofs and skylights so protected, such refusal by said owner, tenant or lessee

Refusal, effect of

shall relieve the owner of the building in course of construction from any responsibility for damage done to persons or property on or within the premises affected.

Building Inspector May Serve Notice.

Requiring
work to be
done

8. Should such enclosure or protection not be so erected the Building Inspector shall issue a notice to be served personally upon the Owner, or authorized agent, constructing or repairing, such buildings, or the owner, tenant or lessee of adjoining premises requiring such enclosure or protection, as provided in this Section, specifying the manner in which same shall be erected.

Building Inspector Empowered to Erect Enclosure and Protection.

If notice is not
complied with

9. And if such enclosures or protections are not erected, strengthened or modified as provided in such notice within three days after the service thereof, the said Building Inspector shall have full power and authority to cause such enclosure to be erected on the fronts and roofs and the skylights protected.

Expenses made
a lien on
property

10. And all expenses connected with same may become a lien on the property in interest so enclosed and protected, and which lien may be created and enforced in the same manner as now provided for in Section 157 of this By-law.

SECTION 81.

Protection of Persons Employed on Buildings.

Fireproof
floor filling

1. All contractors and owners, when constructing buildings where the floors or filling in between the floor beams thereof are of fireproof material or brickwork, shall complete the flooring or filling in as the building progresses, to not less than within three tiers of beams below that on which the iron-work is being erected, provided that the weather conditions or the elements make it impracticable to successfully carry on the work of filling in between the beams nothing in this paragraph shall be construed as to prevent the continued erecting of the steel structure as provided for in paragraph three of this Section.

2. If such buildings do not require filling in between the beams of floors with brick or other fireproof material, all contractors for carpenter work, or the owners of the buildings in the course of construction, shall lay the under flooring thereof on each storey as the building progresses, to not less than within two storeys below the one to which such building has been erected. When double floors are not to be used, such contractor, or the owner, shall keep planked over the floor two storeys below the storey where the work is being performed.

Wood floor
beams boarded
over

3. If the floor beams are of iron or steel, the contractor for the iron or steel work of buildings in course of construction, or the owners of such buildings shall thoroughly plank over the entire tier of iron or steel beams on which the structural iron or steel work is being erected, except such space as may be reasonably required for the proper construction of such iron or steel work, and for the raising or lowering of materials to be used in the construction of such buildings, or such spaces as may be designated by the plans and specifications for stairways and elevator shafts, the same to be enclosed or fenced as provided in subsection four should such floor be not filled in previous to being used by other trades than the erectors, the owners or contractors shall maintain such plank covering on each floor during the course of construction.

Iron or steel
floor beams
planked over

4. If elevating machine or hoisting apparatus are used within a building in course of construction, for the purpose of lifting materials to be used in such construction, the contractors or owners shall cause the shafts or openings in each floor to be enclosed or fenced in on all sides by a substantial barrier, at least four feet in height.

Hoisting
apparatus to be
fenced in

PART XV.

MISCELLANEOUS BUILDINGS.

SECTION 82.

Grain Elevators and Coal Pockets.

1. Nothing in the By-laws shall be construed as to apply to or prevent the erection of what are known as grain elevators, provided the construction of same has the approval of the Commissioners of the City of Edmonton.

Grain elevators

Coal pockets

2. Nor to apply to or prevent the erection of coal pockets or coal elevators as usually constructed under similar conditions.

Ice Houses.

Location and construction

3. Buildings to be used exclusively for the storage of ice may be erected in isolated localities and constructed of such materials and under such conditions as has the approval of the Commissioners of the City of Edmonton.

SECTION 83.

Exhibition Buildings.

Construction

1. Buildings for fair and exhibition purposes, towers for observation purposes and structures for similar uses, whether temporary or permanent in character, shall be constructed in such manner and under such conditions as the Building Inspector may prescribe.

SECTION 84.

Garages.

1. All garages shall be separated from portions of the same building when used for other purposes, by fire-proof walls, floors and ceilings.

Not more than two automobiles

2. Garages to accommodate not more than two automobiles and not kept for hire and located at least twenty feet from any other frame building, may have one upper storey or adjoining room on the ground floor rooms equal in area to the dimensions of the garage, with plaster walls and ceilings and provided with exits separate from that of the garage.

No garage under school or public hall

3. No garage shall be located in any building containing a school or place of assembly or in a dwelling or any building attached to a dwelling, and the floor of all garages must be of Portland cement, concrete, tar or asphaltic mastic or other incombustible material.

No stove in garages

4. No garage, public or private, shall be directly heated by stoves or lighted by other means than incandescent, electric lights covered with wire protectors or guards.

Smoke Houses.

5. All smoke houses shall be of fireproof construction with brick walls, iron doors and brick or metal roof.

Fireproof
construction

6. An iron guard shall be placed over and not less than three feet above the fire, and the hanging rails shall be of iron, and an iron grating shall be placed under the first row of hanging rails, and be not less than eight feet above the floor of the fire-pit.

Guards and
hanging rails

7. The walls of all smoke houses shall be built at least three feet higher than the roof of the building in which they are located, and shall be not less than twelve inches in thickness and be coped with stone or its equivalent.

Walls to be
carried above
roof

PART XVI.

HEATING APPARATUS, DRYING ROOMS, GAS
AND WATER PIPES.

SECTION 85.

Heating Boilers and Furnaces.

1. A brick-set boiler shall not be placed on any wood or combustible floor or beams.

Placing of
brick-set
boilers

2. Wood or combustible floors and beams under and not less than three feet in front and one foot in the sides of all portable boilers shall be protected by a brick foundation of three courses of brickwork, well laid in mortar on sheet iron; the middle course of brickwork to be laid crosswise, and with ventilating spaces within or between the bricks of said middle course; the said sheet iron shall extend at least twenty-four inches outside of the foundation at the sides and front.

Portable
boilers,
flooring under

3. A cast iron ash pan of suitable thickness shall be placed under the boiler, and shall have a flange, turned up in the front and on the sides, four inches, high; said pan shall be in width not less than the base of the boiler, and shall extend at least two feet in front of it.

Ash pan

Base

4. If a boiler is supported on a cast iron base with a bottom of the required thickness for an ash pan, and is placed on bearing lines of brick in the same manner as specified for an ash pan, then an ash pan shall be placed in front of the said base and shall not be required to extend under it.

Protection of
woodwork

5. All lath and plaster and wood ceilings and beams, over and to a distance of not less than four feet in front of all boilers, shall be shielded with metal. Where smooth ceilings are to be protected, the metal to be applied shall leave an air space of not less than one-quarter of an inch between the metal and ceiling. Where beams are exposed the metal to be applied shall follow the contour of the beams. The distance from the top of the boiler to said shield shall be not less than twelve inches, and the smoke-pipe leading therefrom shall be not less than twenty-four inches.

Distance from
combustible
partitions

6. No combustible partition shall be within four feet of the sides and back and six feet from the front of any boiler, unless said partition shall be covered with metal to the height of at least five feet above the floor, and shall extend from the end or back of the boiler to at least five feet in front of it; then the distance shall be not less than two feet from the sides and five feet from the front of the boiler.

Covers, how
constructed

7. All brick hot-air furnaces shall have two covers, with an air space of at least four inches between them; the inner cover of the hot-air chamber shall be either a brick arch or two courses of brick laid on galvanized iron or tin, supported on iron bars; the outside cover, which is the top of the furnace, shall be made of brick or metal supported on iron bars, and so constructed as to be perfectly tight, and shall be not less than twelve inches below any combustible ceiling or floor beams.

Walls of
furnaces, how
built

8. The walls of the furnace shall be built hollow in the following manner: One inner and one outer wall, each four inches in thickness, properly bonded together with an air space of not less than three inches between them.

Distances from
woodwork

9. Furnaces shall be built at least twelve inches from all woodwork.

10. The cold air boxes of all hot air furnaces shall be made of metal, brick or other incombustible material. Cold air boxes material for

11. All portable hot air furnaces shall be placed at least two feet from any wood or combustible partition or ceiling, unless the partitions and ceilings are properly protected by a suspended metal shield, when the distance shall be not less than one foot. Distances from woodwork for portable

12. Wood floors under all portable furnaces shall be protected by three courses of brickwork, well laid in mortar on galvanized sheet iron, the middle course to be laid crosswise, and with ventilating spaces within or between the bricks of said middle course. Said brickwork shall extend at least two feet beyond the furnace in front of the ash pan. Wood floors under portable furnaces to be protected

SECTION 86.

Registers.

1. Registers located over a brick furnace shall be supported by a brick shaft built up from the cover of the hot air chamber; said shaft shall be lined with a metal pipe, and all wood beams shall be trimmed away not less than four inches from it. When located over a furnace.

2. Where a register is placed on any woodwork in connection with a metal pipe or duct, the end of the said pipe or duct shall be flanged over on the woodwork under it. When placed on woodwork

3. All register boxes shall be made of tin plate or galvanized iron with a flange on the top to fit the groove in the frame, the register to rest upon the same; there shall be an open space of two inches on all sides of the register box, extending from the under side of the border to and through the ceiling below. The said openings shall be fitted with a tight tin or galvanized iron casing, the upper end of which shall be turned under the frame. Register boxes

4. When a register box is placed on the floor over a portable furnace, the open space on all sides of the register box shall be not less than three inches. Register box in floor over portable furnace

SECTION 87.

Drying Rooms.

Fireproof
drying-rooms

1. All walls, ceilings and partitions enclosing drying rooms shall be made of fireproof material.

SECTION 88.

Ranges and Stoves.

Kitchen range
near stud
partition

1. Where a kitchen range is placed within six inches from a wood stud partition, the said partition shall be shielded with metal from the floor to the height of not less than three feet higher than the range.

Ranges on
wood floors

2. All kitchen ranges with no provision for air space between their underside and the floor shall be set on sheet metal underlaid with sheet asbestos of not less area than three inches outside the base of the range.

Range against
furred wall
forbidden

3. No range shall be placed against a furred wall.

Metal hoods
over large
ranges

4. All lath and plaster or wood ceilings over all large ranges and ranges in hotels and restaurants, shall be guarded by metal hoods placed at least nine inches below the ceiling.

Ventilating
pipe for hood
over range

5. A ventilating pipe connected with a hood over a range shall be an individual pipe, having no connection with any other pipe, and shall be covered with one inch of asbestos on wire mesh and shall not be less than nine inches from wood or lath and plaster work which shall be shielded with metal. The pipe shall go either outside of the building and discharge at least four feet above the roof, or be connected with a suitable brick flue lined with burnt clay or heavy iron pipe, which shall be used exclusively for the ventilating pipe of the range.

Laundry stoves
on wood floors

6. Laundry stoves on wood or combustible floors shall have a course of bricks, laid on metal, on the floor under and extended twenty-four inches on all sides of them.

Stoves for
heating

7. All stoves for heating shall be properly supported on iron legs resting on the floor three feet from all lath and plaster or woodwork.

8. If the lath and plaster or woodwork is properly protected by a metal shield, then the distance shall be not less than eighteen inches. Distance from combustible wood

9. A metal shield shall be placed under and twelve inches in front of the ash pan of all stoves that are placed on wood floors. Metal under stove on wood floor

10. All low gas stoves shall be placed on iron stands, or the burners shall be at least six inches above the base of the stoves, and metal guard plates placed four inches below the burners, and all woodwork under them shall be covered with metal. Gas connection to such stoves shall be made by metal pipes, unless there is no valve on the gas stove. Gas stoves

11. All receptacles for ashes shall be of galvanized iron, brick or other incombustible material. Ash receptacles

SECTION 89.

Notice as to Heating Apparatus.

1. In cases where hot water, steam, hot air or other heating appliances or furnaces are hereafter placed in any building, or flues or fireplaces are changed or enlarged, due notice shall first be given to the Fire Department by the person or persons placing the said furnace or furnaces in said building, or by the contractor or superintendent of said work. By contractor or person installing

SECTION 90.

Gas and Water Pipes.

1. Every building, other than a private dwelling house hereafter erected, and all factories, hotels, churches, theatres, schoolhouses and other buildings of a public character now erected, in which gas or steam is used for light or heating, shall have the supply pipes leading from the street mains provided each with a stop-cock placed in the sidewalk at or near the curb, and so arranged as to allow of shutting off at that point. To have stop-cock on sidewalk

2. No gas, water or other pipes which may be introduced into any building shall be let into wood beams When pipe is let into wood beams

unless the same be placed within thirty-six inches of the end of the beams.

Limiting depth
for into beams

3. And in no building shall the said pipes be let into any beam more than two inches of its depth.

Rules and Regulations for Installation of Gas Pipes.

Gas company's
rules

4. The installation of all gas pipes in any building or structure in the City of Edmonton shall be in accordance with the rules and regulations prescribed by the City Gas Department, and the said rules and regulations are hereby made a part of the requirements of this By-law.

Gas pipes to be
tested

5. All gas pipes shall be inspected and tested by the Plumbing Inspector before the floors are laid, and a certificate of the same from the Inspector shall be placed on file in the Department of Buildings by the owner of the building or his representative. The installation of the gas pipes shall be subject to the approval of the Inspector of Buildings.

Certificate

Gas Brackets.

Distance from
woodwork

6. All gas brackets shall be placed at least three feet below any ceiling or woodwork, unless the same is properly protected by a shield; in which case the distance shall be not less than eighteen inches.

Swinging
brackets

7. No swinging or folding gas brackets shall be placed against or near any stud partition or woodwork, and all swinging gas brackets shall be provided with stops to prevent them from swinging against woodwork.

Brackets on
woodwork

8. No gas bracket on any lath and plaster partition or woodwork shall be less than five inches in length, measured from the burner to the plaster surface or woodwork.

Gaslights near
curtains

9. Gaslights placed near window curtains or any other combustible material shall be guarded by globes or wire cages.

PART XVII.

ROOFS, LEADERS, CORNICES, BULKHEADS,
SCUTTLES AND TANKS.

SECTION 91.

Mansard Roofs.

1. If a mansard or other roof of like character, having a pitch of over sixty degrees, be placed on any building, except a wood building, or a dwelling house not exceeding three storeys nor more than forty feet in height, it shall be constructed of iron rafters and lathed with iron or steel on the inside and plastered, or filled in with fireproof material not less than three inches thick, and covered with metal, slate or tile.

How
constructed

2. No false mansard or other similar roof construction for increasing the apparent height of a building, but having no full storey behind the same, shall be placed on any building to a greater height than five feet above the cornice or the highest point of the roof beams.

SECTION 92.

Cornices and Gutters.

1. On all buildings hereafter erected within the first fire limits, the exterior, cornices, inclusive of those on show windows, and gutters shall be some fireproof material.

Within the
fire limits

2. All fireproof cornices shall be well secured to the walls with iron anchors, independent of any woodwork.

Secured with
anchors

3. No cornice not including pediments, shall extend more five feet above the highest point of the roof beams of any building.

Height for
cornice above
roof beams

Walls in Relation to Roof Planking and Cornices.

4. In all cases the walls shall be carried up to the planking of the roof.

5. Where the cornice projects above the roof the walls shall be carried up to the top of the cornice.

When cornice
projects above
roof

Party walls to
extend above
planking of
cornice

6. The party walls shall in all cases extend above the planking of the cornice and be coped.

Unsafe Cornices.

To be removed

7. All exterior wood cornices within the first fire limits that may now be or that may hereafter become unsafe or rotten shall be taken down.

If replaced

8. And if replaced, shall be constructed of some fire-proof material.

Cornices Damaged by Fire.

Removed if
one-half
damaged

9. All exterior cornice of wood or gutters within the first fire limits that may hereafter be damaged by fire to the extent of one-half shall be taken down and if replaced shall be constructed of some fireproof material;

Repaired if
damaged less
than one-half

10. But if not damaged to the extent of one-half, the same may be repaired with the same kind of material of which they were original constructed.

SECTION 93.

Bulkheads on Roofs and Scuttles.

Inclosures on
roofs

How
constructed

On fireproof
buildings

1. Bulkheads used as enclosures for tanks and elevators, and coverings for the machinery of elevators and all other bulkheads, including the bulkheads of dwelling houses, on buildings not more than four storeys in height hereafter erected or altered, may be constructed of hollow fireproof blocks; or of wood, covered with not less than two inches of fireproof material or filled in the thickness of the studding with such material, and covered on all outside surfaces with metal, including both surfaces and edges of doors. On fireproof buildings the bulkheads and enclosures on roofs shall be constructed of fireproof materials only.

Scuttles, bulk-
heads, ladders
or stairs

2. All buildings shall have scuttle or bulkheads, with ladders or stairs leading thereto, and easily accessible to all occupants.

Size for
scuttles

3. No scuttle shall be less in size than two by three feet.

4. No staging or stand shall be constructed or occupied upon the roof of any building without first obtaining the approval of the Inspector of Buildings. Prohibiting staging on roof except by permit

SECTION 94.

Tanks.

1. Tanks containing more than five hundred gallons of water or other fluid hereafter placed in any storey, or on the roof or above the roof of any building now or hereafter erected, shall be supported on iron or steel beams of sufficient strength to safely carry the same; Contents
Supports
2. And the beams shall rest at both their ends on brick walls or on iron or steel girders or iron or steel columns or piers of masonry. Bearings for beams
3. Underneath any said water tank or on the side near the bottom of the same, there shall be a short pipe or outlet not less than four inches in diameter, fitted with a suitable valve having a lever or wheel handle to same, to discharge the weight of the fluid contents from the tank, in case of necessity, unless tank water is to supply automatic sprinklers. Discharge pipe
4. Such tanks shall be placed where practicable at one corner of a building, and shall not be placed over nor near the line of stairs, unless the stairs are enclosed with brick walls of sufficient strength to support the added load of the tank and contents. Location for tanks
5. Covers on top of water tanks placed on roofs, if of wood shall be covered with tin. Covers if of wood
6. All wooden tanks shall be coopered with metal hoops—circular in section.

SECTION 95.

Roofing and Leaders Within the Fire Limits.

1. The planking and sheathing of the roofs of buildings shall not in any case be extended across the side or party wall thereof. Roof planking

Materials for
roofing

2. Every building and the tops and sides of every dormer window thereon shall be covered and roofed with brick, tile slate, tin, copper or iron, or such other incombustible material as has the approval of the Commissioners of the City of Edmonton.

Dormer
windows

3. And the outside of the frames of every dormer window hereafter placed upon any building shall be made of some fireproof material.

Roof covering
for frame
buildings
within the first
fire limits

4. No wood or other building within the first fire limits which shall require roofing shall be roofed with any other roofing or covered except as aforesaid, including the tops and sides of dormer windows.

Shingle roofs
repairing of

5. Nothing in this section shall be construed to prohibit the repairing of any shingle roof within or without fire limits, provided the building is not altered in height, but this shall not be construed to permit the renewal of a shingle roof.

Leaders from Roofs.

To protect
walls and
foundations

6. All buildings shall be kept provided with proper metallic leaders for conducting water from the roofs in such manner as shall protect the walls and foundations of said buildings from injury.

Leaders not to
discharge on
sidewalk

7. In no case shall the water from the said leaders be allowed to flow upon the sidewalk, but the same shall be conducted by pipe or pipes to the sewer.

When no sewer
in street

8. If there be no sewer in the street upon which such buildings front, then the water from the said leader shall be conducted by proper pipes or pipe, below the surface of the sidewalk to the street gutter.

PART XVIII.

ELEVATORS, HOISTWAYS AND DUMB-WAITERS—STAIR HALL ENCLOSURES.

SECTION 96.

Elevators and Hoistways.

When not
enclosed

1. In any building in which there exists any hoistways or freight elevator or well hole not enclosed in

walls constructed of brick or other fireproof material and provided with fireproof doors, the openings thereof through and upon each floor of said buildings, shall be provided with and protected by a substantial guard or gate, and with good and sufficient automatic trap-doors, properly counter-weighted, covered with tin on the underside and edges, in accordance with standard for fire doors and so constructed as to form a substantial floor surface when closed. The guards or gates and railings shall be of such material and form of construction as may be approved by the Inspector of Buildings.

Guard or gates

Materials

2. Such guards or gates shall be kept closed at all times, except when in actual use, and the trap-doors shall be closed at the close of the business of each day by the occupant or the occupants of the building having the use or control of same.

Gates and trap-door to be kept closed

SECTION 97.

Elevator Enclosures.

1. All elevators hereafter placed in any building shall be enclosed in suitable walls of brick, or with a suitable framework of iron and burnt clay filling, or with such other fireproof material and form of construction as has the approval of the Commissioners of the City of Edmonton.

2. Except that the enclosure walls in non-fireproof buildings three or more storeys in height and used as warehouses, stores, or factories, shall be of solid brick-work.

In non-fire-proof ware-houses, stores and factories three or more storeys in height

3. If the enclosure walls are of brick, laid in cement mortar, and not used as bearing walls, they may be eight inches in thickness for not more than fifty feet of their uppermost height, and increasing in thickness four inches for the remaining lower portion or part thereof.

Thickness for brick inclosure walls

4. In fireproof buildings, when the construction of the elevator enclosure is of iron framework and burnt clay filling or other approved materials the said construction shall be not less than six inches in thickness.

Thickness for iron and burnt clay inclosures

5. Said walls or construction shall in all cases extend through and at least three feet above the roof.

Walls carried above roof

Doors

6. All door openings in any said enclosures shall be provided with standard fire-doors made solid for their full height and hung rabbeted wrought-iron or steel frames or to wrought-iron eyes built into the wall, and shall have iron stone or cement concrete door-sills of the full width and length of the openings. In buildings other than warehouses and factories, lights of wired glass, in approved metal frames, may be placed in such doors, but no one pane shall exceed seven hundred and twenty square inches in size.

Glass panels
in doors
Doors in
elevator shafts
of private
dwellings

7. The doors used for openings in dwelling houses intended for the occupancy of one family may be of wood covered on the inner surface and edges with metal, not including the openings in the cellar, nor above the roof, in any such shaft walls, which latter doors shall be entirely covered with metal.

Skylights over Elevator Enclosures.

Roofs and sky-
lights over
inclosed
elevator shafts

8. The roofs over all enclosed elevators shall be made of fireproof materials, with a skylight at least three-fourths the area of the shaft, the glass to be not more than one-eighth of an inch thick, and covered above and below with strong wire netting,* but wired glass shall not be used in skylights over elevator enclosures.

Bottom of Elevator Shafts.

When shaft
does not
extend to
ground

9. When the shaft does not extend to the bottom of the cellar or lowest storey, the lower end shall be enclosed in fireproof material.

Enclosing Elevator-Operating Machinery.

Similar to shaft

10. When the enclosure of an elevator has an opening to accommodate machinery for operating same, such as shafts, pulleys, drums, cables, etc., said machinery shall be enclosed in a similar manner to the shaft.

SECTION 98.

Dumb-Waiter Shafts.

How
constructed

1. All dumb-waiter shafts, other than those which do not extend more than three storeys above the cellar

or basement in private dwelling houses shall be enclosed in suitable walls of brick, or with burnt clay blocks set in iron frames of proper strength.

2. Or such other fireproof material and form of construction as in the opinion of the Inspector of Buildings may be equally as good.

Other fire-proof methods

3. Said walls or construction shall extend at least three feet above the roof.

Wall carried above roof

Skylight Over Dumb-Waiter Shaft.

4. And be roofed over with fireproof material and with a skylight at least three-fourths the area of the shaft, made with metal frames and glazed with glass not more than one-eighth of an inch thick and covered above and below with strong wire netting, but wired glass shall not be used in skylights over dumb-waiter enclosures.

Size

Door in Dumb-Waiter Shafts.

5. A dumb-waiter shall be considered a special form of elevator whose dimensions shall not exceed three feet square and four feet in height, and which is designed for the carrying of light articles, and is provided with one or more shelves.

Definition

6. All openings in the enclosure walls or construction shall be provided with self-closing fireproof doors.

Doors

7. When the dumb-waiter is carried through the cellar or lowest storey of any building it shall be enclosed in that storey with brick walls not less than eight inches thick.

Brick wall enclosure in cellar

Bottom and Top of Dumb-Waiter Shafts.

8. When the shaft does not extend to the floor level of the cellar or lowest storey, the bottom of the shaft shall be constructed of fireproof material.

When shaft does not extend to ground

9. When the shaft does not extend through the top storey and does not extend through more than three storeys the top of the shaft shall be also constructed of fire-proof material.

When shaft does not extend to roof

When mandatory to carry shaft above roof

10. When the shaft extends through more than three storeys it shall be carried above the roof, as before provided.

SECTION 99.

Elevators in Existing Hotels.

Non-fireproof hotels to enclose elevators

1. In every non-fireproof building, used or occupied as a hotel, in which is an elevator not enclosed in a fire-proof shaft, such elevators shall be enclosed in suitable walls, constructed and arranged as in this By-law required for elevator shafts.

SECTION 100.

Screen Under Elevator, Sheaves.

Iron gratings under machinery at top of elevator shafts

1. Immediately under the sheaves at the top of every elevator shaft in any building there shall be provided and placed a substantial grating or screen of iron or steel, of such construction as shall be approved by the Inspector of Buildings.

SECTION 101.

Inspection, Installation, Alteration and Operation of Elevators.

Periodical

1. The Inspector of Buildings and Superintendent of Light and Power shall cause an inspection of elevators carrying passengers or employees to be made at least once every three months.

Regulations to be made

2. And shall make regulations for the inspection, installation, alteration and operation of such elevators, and shall also make regulations for the installation, alteration and operation of freight elevators with a view to safety;

Qualifications for conductors

3. And shall also prescribe suitable qualifications for persons who are placed in charge of the running of passenger or freight elevators.

Necessary repairs to be made

4. The regulations shall require any repairs found necessary to any such passenger or employees' elevators to be made without delay by the owner or lessee.

5. In case defects are found to exist which endanger life or limb by the continued use of such elevator, then, upon notice from the Superintendent of Light and Power use of such elevator shall cease, and it shall not again be used until a certificate shall be first obtained from said Superintendent that such elevator has been made safe.

Certificate

6. No person shall employ or permit any person to be in charge of running any passenger elevator who does not possess the qualifications prescribed therefor.

Incompetent
persons not to
run elevators

7. No person shall run any passenger or freight elevator in the City of Edmonton unless he shall first register at the Office of the Department of Light and Power his name, age and residence and also the location of the building in which he is to perform such service, and shall first receive from the Superintendent of Light and Power a certificate as to his competency.

SECTION 102.

Stairs, Hallway Enclosures.

1. In all stores, warehouses and factories the staircase halls shall be enclosed with suitable walls of brick, or with burnt clay blocks set in iron frames, or such other fireproof materials and forms of construction as may be approved by the Inspector of Buildings, except that the enclosure walls in such buildings exceeding three storeys in height shall be of brick.

Material for
enclosure

2. Said walls or construction shall be continuous and extend at least three feet above the roof.

Extend
through roof

3. The roof over the stair hall enclosure shall be covered with a metal and glass skylight at least three-eighth of the area of the enclosure, and constructed and glazed, as required for skylights over elevator enclosures.

Skylight

4. All door openings in such stair hall enclosures shall be provided with self-closing fireproof doors and frames.

Doors

- Windows** 5. All window openings shall have window frames of metal, and the window sash shall be fixed sash of metal and glazed with wired glass, but no one pane shall exceed seven hundred and twenty square inches in size.
- Connecting in first storey** 6. At least one of such enclosed stair halls in each of said buildings shall have a like connecting enclosure hallway in the first storey and extend to the street, and all door or window openings in the same shall be provided with doors and windows as provided for openings in the stair hall enclosures.
- Escalators** 7. Escalators, or endless or revolving stairs, shall be deemed stairs and comply with all the requirements contained in this Section for the enclosure of stairs.
8. Any hotel building having an area requiring more than one stairway, as provided in Section 75 of this By-law, shall have at least one such continuous stairway enclosed in the manner described in this Section.

PART XIX.

FIRE APPLIANCES, FIRE ESCAPES AND FIRE-PROOF SHUTTERS AND DOORS.

SECTION 103.

Standpipes.

- Size of standpipes** 1. In every existing building exceeding fifty-five and not over one hundred feet in height, unless already provided with a three-inch or larger standpipe, and in all buildings hereafter erected exceeding fifty-five and not exceeding one hundred feet in height, there shall be provided a vertical standpipe of not less than four inches in diameter.
- Building over one hundred feet in height** 2. In every existing building exceeding one hundred feet in height, unless already provided with a four-inch or larger standpipe, and in all buildings hereafter erected exceeding one hundred feet in height, there shall be provided a vertical standpipe of not less than six inches in diameter.

3. These standpipes shall be of wrought iron or steel galvanized, and, together with fittings and connections, shall be of such strength as to safely withstand at least three hundred pounds water pressure to the square inch when installed and ready for service; also to stand such a test without leaking at joints, valves or fittings.

Material

4. Standpipes shall be located within fireproof stairway enclosures where the latter are of such construction and as near stairways as possible where they are not so enclosed.

Location

5. In buildings exceeding one hundred feet deep fronting on two or more streets there shall be a standpipe at each end of building, and in large area buildings there shall be one standpipe at each stairway, or within each stairway enclosure.

Number of
standpipes

6. Where more than one standpipe is required in a building they shall be connected at their bases by pipes of size equal to that of largest standpipes, so that water from any source will supply all the standpipes.

Connection
at bases

7. Standpipes shall extend from the cellar to and through the roof, with a hose connection located from four to six feet above the floor level fitted with approved straightway composition gate valve in each storey, including cellar, and a hose connection provided above the roof with the valve controlling latter, located in the standpipe under the roof and arranged to be operated both from above and below the roof. A suitable three-quarter inch drain pipe and valve shall be provided under the roof for each roof connection.

Arrangement
of pipe and
connections

8. Hose sufficient to reach to all parts of the floor shall be attached to each outlet in the building, and hose for roof-hydrant may be placed on rack in top floor near the scuttle leading to the roof. Hose shall be two and one-half or two and five-eighths inches in diameter, in fifty-foot lengths, and provided with standard couplings at each end, all couplings to be of same hose thread as that in use by the local Fire Department.

Hose

9. Hose to be of approved linen, made under specifications recommended by the Commissioners of the City of Edmonton.

Kind of hose

Hose fittings

10. Each line of hose shall be provided with washers at both ends, and be fitted with play pipe or nozzle of Underwriter pattern, having handles at the base and with discharge outlet not less than three-quarter inch in diameter. One spanner to be located at each hose connection throughout the building.

Siamese connections

11. All standpipes shall be provided with a Siamese steamer connection, located on the outside of the building about one foot above the curb level, and where a building fronts on two or more streets, a connection to be provided on each street front. Inlet pipe from steamer connection to standpipe to be not less than the diameter of the largest standpipe. The thread on the Siamese connection shall be uniform with that used by the local Fire Department. Siamese steamer connections shall be provided with check valves in the "Y" and substantial caps provided to protect thread on the connection.

The steamer connection fitting should be adjusted looking down at an angle of forty-five degrees. A suitable iron plate with raised letters should be secured to the wall near steamer connection, reading "To Standpipes."

Check valves

12. In each connecting pipe just inside of the building in a horizontal section shall be placed a straightway check valve, but not a gate valve.

Drip pipe

13. A drip pipe with valve to same shall be placed between said check valve and steamer connection to properly drain this section to prevent freezing.

Water supplies

14. In addition to the provision made for steamer connection to standpipes, the water supply may be from city water where pressure is sufficient, automatic fire-pump of five hundred gallons or more capacity per minute, elevated tank or steel pressure tank of not less than five thousand gallons capacity.

Automatic supply for certain buildings

15. In all buildings coming under these regulations as to height which are occupied for living or sleeping purposes, such as hotels, lodging houses, hospitals and asylums, the standpipe system must have at least one of the approved automatic supplies before described.

16. Where a standpipe is connected to a tank there shall be a straightway check valve in a horizontal section of pipe between the first hose outlet in connecting pipe and tank, and said tank must be filled by a separate pipe, and not through the standpipe;

Check valve
under tank

And where the water in such tank is also used for house supply the house supply pipe shall extend from the bottom of the tank to such a height as will reserve not less than thirty-five hundred gallons of water for fire purposes.

17. Where pumps constituting a supply to standpipes are located in the lowest storey of a building, they shall be placed not less than two feet above the floor level, and boilers upon which pumps depend for steam shall be arranged so that flooding of fires under same will be impossible.

Location of
pumps and
boilers

18. In every building exceeding one hundred feet in height, at least one passenger elevator shall be kept in readiness for immediate use by the Fire Department during all hours of the night and day including holidays and Sundays.

Elevator

19. All existing buildings, and those hereafter erected exceeding one hundred feet in height, shall be provided with auxiliary fire apparatus and appliances, such as wrenches, spanners, fire extinguishers, hooks, axes and pails, as may be required by the Chief of the Fire Department; all of said apparatus to conform in design to those in use by the local Fire Department.

Auxiliary fire
appliances

Sprinkler Pipes in Basements and Cellars of Merchantile Manufacturing Buildings.

20. In such buildings as are used or occupied for mercantile purposes there may be provided in addition to said standpipe or standpipes, an approved system of automatic sprinklers placed at the ceiling of each storey below the first or grade floor and extending to the full depth and breadth of building.

Where
required

Buildings of large area, which are occupied for mercantile or manufacturing purposes, when located within a congested district, forming, in the opinion of the Inspector of Buildings or Chief of Fire Department, "Conflagration Breeders," shall be protected throughout the entire building with automatic sprinklers.

Pipe sizes

21. The pipe sizes and spacing of heads for said sprinkler system shall conform to the schedule of rules recommended by the Commissioners of the City of Edmonton which are hereby made a part of the requirements of this By-law.

Siamese connection

22. Said sprinkler pipes shall be connected with a pipe of not less than four inches in diameter leading to the outside of building and there provided with an approved Siamese steamer connection, latter to be installed under requirements set forth in this Section, and to be under the control and for the use of the Fire Department.

Direction plate

23. A suitable iron plate with raised letters shall be securely attached to the wall near said steamer connection reading "Cellar Sprinklers" where sprinklers are installed in cellars only and reading "Automatic Sprinklers" where the entire building is so protected.

SECTION 104.

Fire Escapes.

Apartment houses

1. Every apartment house, or dwelling house occupied by or built to be occupied by three or more families.

Hotels, lodging houses, boarding houses

2. Any every building already erected, or that may hereafter be erected, three or more storeys in height, occupied and used as a hotel, apartment-hotel or lodging house, and every boarding house, having more than fifteen sleeping rooms above the basement storey;

Factories, hospitals, asylums

3. And every factory, mill, manufactory or workshop, hospital, asylum or institution for the care or treatment of individuals;

Three storey stores and workshops

4. And every building three storeys and over in height used or occupied as a store or workroom;

Schools, assembly places

5. Any every building in whole or in part occupied or used as a school or place of instruction or assembly;

Office buildings

6. And every office building three storeys or more in height;

7. Shall be provided with such good and sufficient fire-escapes, stairways, or other means of egress in case of fire as shall be directed by the Inspector of Buildings. As directed
8. The owner or owners of any building upon which a fire escape is erected shall keep the same in good repair and properly painted. To be kept in good condition
9. Fire escapes on the outside of buildings shall consist of open iron balconies and stairways. To consist of
10. Fire escapes must not project over the line of any street, lane or public place. Projection of steel
11. The stairways shall be placed at an angle of not more than sixty degrees, with steps not less than six inches in width and twenty inches in length, and with a rise of not more than nine inches. Angle for stairs
12. The balcony on the top floor shall be provided with a goose-neck ladder leading from said balcony to above the roof. Goose-neck ladders

Balconies

13. The balconies shall be not less than three feet in width, and placed where directed by the Inspector of Buildings, at each storey above the ground floor. Width for balconies
14. They shall be below and not more than one foot below the window sills and extend in front of and not less than nine inches beyond each window. Height from window sill
15. There shall be a landing not less than twenty-four inches square at the head and foot of each stairway. Landings
16. The stairway opening on each platform shall be of a size sufficient to provide clear headway. Stair openings

Floors of Balconies.

17. The floors of balconies shall be of wrought iron or steel slats not less than one and a half inches by three-eighths of an inch, placed not more than one and one-quarter inches apart, and well secured and riveted Floor slats

to iron battens one and a half inches by three-eighths of an inch, not over three feet apart and riveted at the intersections.

Size of stair openings

18. The openings for stairways in all balconies shall be not less than twenty-one inches wide and thirty-six inches long, and such openings shall have no covers of any kind.

Strength of balconies

19. The platforms or balconies shall be constructed and erected to safely sustain in all their parts a safe load at a ratio of four to one, of not less than eighty pounds per square foot of surface.

Railings.

Top rails

20. The outside top rail shall extend around the entire length of the platform and in all cases shall go through the wall at each end, and be properly secured by nuts and four-inch square washers at least three-eighths of an inch thick, and no top rail shall be connected at angles by cast iron. The top rail of balconies shall be one and three-quarters inches by one-half inch of wrought iron, or one and a half inch angle iron one-quarter inch thick.

Bottom rails

21. The bottom rails shall be one and one-half inches by three-eighths of an inch wrought iron or steel, or one and one-half inches angle iron, one-quarter inch thick, well leaded into the wall.

Filling-in bars

22. The standards or filling-in bars shall be not less than one-half inch round or square wrought iron or steel, well riveted to the top and bottom rails and platform frame.

23. Such standards or filling-in bars shall be securely braced by outside brackets at suitable intervals, and shall be placed not more than six inches from centres.

Height for railings

24. The height of railings shall be in no case less than two feet nine inches.

Stairways.

25. The stairways shall be constructed and erected to fully sustain in all their parts a safe load at a ratio of four to one of not less than one hundred pounds per step, with the exception of the tread which must safely sustain at said ratio a load of two hundred pounds.

Bearing
strength for
stairs

26. The treads shall be flat open treads not less than six inches wide and with a rise of not more than nine inches.

Treads

27. The stairs shall be not less than twenty inches wide; the strings shall be not less than three-inch channels of iron or steel, or other shape equally strong, and shall rest upon and be fastened to a bracket, which shall be fastened through the wall as hereinafter provided.

Width for
stairs

28. The strings shall be securely fastened to the balcony at the top, and the steps in all cases shall be double-riveted or bolted to the strings.

Strings

29. The stairs shall have three-quarter inch hand-rails of wrought iron, well braced.

Hand rails

Brackets.

30. The brackets shall be not less than one-half inch by one and three-quarter inches wrought iron edgewise, or one and three-quarter inch angle iron, one-quarter inch thick, well braced.

Size of
brackets

31. They shall be not more than four feet apart, and shall be braced by means of not less than three-quarters of an inch square wrought iron, and shall extend two-thirds of the width of the respective balconies or brackets.

Distance apart

32. The brackets shall go through the walls and be turned down three inches, or be properly secured by nuts and four inch square washers at least three-eighths of an inch thick.

How secured

33. On new buildings the brackets shall be set as the walls are being built.

Build in
brackets

Brackets for
existing
buildings

34. When brackets are put on buildings already erected the part going through the wall shall be not less than one inch in diameter with screw nuts and washers not less than five inches square and one-half an inch thick.

Drop-Ladders.

From lower
balcony

35. A proper drop-ladder shall be required from the lower balcony when the floor of such balcony is more than fourteen feet above the sidewalk or ground.

Painting.

Two coats of
paint

36. All the parts of such fire-escapes shall receive not less than two coats of paint, one in the shop and one after erection.

Incumbrances on Fire-Escapes.

Prohibiting
incumbrances

37. No person shall at any time place any incumbrances of any kind whatsoever before or upon any fire-escape, balcony or stairway.

To report
incumbrances
on fire-
escapes

38. It shall be the duty of every fireman and policeman who shall discover any fire-escape, balcony or stairway of any fire-escape incumbered in any way, to forthwith report the same to the commanding officer of his Department, and such commanding officer shall forthwith cause the occupant of the premises or apartment to which said fire-escape balcony or stairway is attached or for whose use the same is provided, to be notified either verbally or in writing, to remove such incumbrance including ice and snow and keep the same clear.

Ordering the
removal of
incumbrances

39. If said notice shall not be complied with by the removal forthwith, of such incumbrances, and keeping said fire-escape, balcony or stairway free from incumbrance, then it shall be the duty of said commanding officers to apply to the nearest police magistrate for summons of the occupant or occupants of the said premises or apartment of which the fire-escape forms a part, and the said parties shall be brought before the said magistrate, as for a misdemeanor;

40. And, on conviction, the occupant or occupants of said premises or apartment shall be fined not more than ten dollars for each offence, or may be imprisoned not to exceed ten days, or both, in the discretion of the court.

Penalty for
disobeying
order to
remove
incumbrances

Notice Plates on Fire-Escape Balconies.

41. In constructing all balcony fire-escapes, the manufacturer thereof shall securely fasten to all balconies, in a conspicuous place, a cast-iron plate having suitable raised letters on the same, to read as follows: "Notice—Any person placing any incumbrance on this balcony is liable to a penalty of ten dollars and imprisonment for ten days."

Plate stating
penalty

Scuttle Ladders.

42. All buildings requiring fire-escapes shall have stationary iron ladders to the scuttle opening in the roof thereof, and all scuttles and ladders shall be kept so as to be ready for use at all times.

Stationary

Bulkheads of Stairs and Doors.

43. If a bulkhead is used in place of a scuttle, it shall have stairs with sufficient guard or handrail leading to the roof.

Stairs

44. In case the building shall be occupied by more than one family, the door in the bulkhead or any scuttle, shall at no time be locked, but may be fastened on the inside by movable bolts or hooks.

Scuttle door
or bulkhead
door to be
locked

SECTION 105.

Fireproof Shutters and Doors.

1. Every building, except private dwelling-houses and churches, shall have fireproof doors, blinds or shutters, hung to wrought-iron or steel hanging frames or to wrought-iron eyes built into the wall, on every exterior window and opening above the first storey thereof.

Exterior of
building

When shutters
or doors are
not required

2. Except on the front openings of buildings fronting on streets which are more than sixty-six feet in width, or where no other buildings are within sixty-six feet of such openings.

Wood tin-
covered
shutters or
doors

3. The said doors, blinds or shutters shall be of Standard construction, that is, constructed of pine or other soft wood of two or three thicknesses (depending on size) of matched boards, clinch-nailed, at right angles, or placed diagonally with each other, and securely covered with tin, on both sides and edges, with folded lapped joints, the nails for fastening the same being driven inside the lap; the hinges and bolts, or latches, shall be secured or fastened to the door or shutter by wrought-iron bolts passing through the door or shutter, and secured by nuts and washers on the opposite side after the same has been covered with tin, and such door or shutters shall be hung upon a wrought-iron frame, independent of the woodwork of the windows and doors or to wrought-iron hinges securely fastened in the masonry.

Hanging
frames

Metal Window Frames and Sash and Wired Glass.

How
constructed

4. On any opening where the window frames and sash are of metal, and the sash are glazed with the wire glass not less than one-quarter of an inch in thickness, and each pane measuring not more than seven hundred and twenty square inches, the same shall be deemed equivalent of and a substitute for fireproof shutters; except that when an exposing building is within thirty feet, the wire glass in the metal sash shall be double with an air space between the glass, ventilated to the inside.

Shutters Arranged to be Opened From the Outside.

Certain
shutters to
open from
outside

5. All shutters opening on fire-escapes, and at least one row, vertically, in every three vertical rows on the front window openings above the first storey of any building, shall be so arranged that they can be readily opened from the outside by firemen.

Rolling Metal Shutters.

To be counter-
balanced

6. No rolling iron or steel shutters shall be hereafter placed above the first storey of any building, and when used on the first storey they shall be counter-balanced

so that the said rolling shutters may be readily opened by the firemen.

Interior Wall Openings to Have Fireproof Doors.

7. All buildings specified in this Section, hereinafter erected or altered, having openings in interior walls, shall be provided with suitable fireproof doors where deemed necessary by the Inspector of Buildings, and to be provided with approved automatic self-closing devices.

When deemed
necessary by
Inspector of
Buildings

Outside and Inside Fireproof Shutters and Doors

To be Closed at Night.

8. All occupants of buildings shall close all exterior and interior fireproof shutters, doors and blinds at the close of the business of each day.

PART XX.

FIREPROOF BUILDINGS.

SECTION 106.

Fireproof Buildings.

1. Every building hereafter erected or altered to be used as a theatre, lodging-house, school, jail, public station, hospital, asylum, institution for the use, care or treatment of persons, the height of which exceeds three storeys and not more than forty feet in height; and every building hereafter erected or altered to be used as an hotel or an apartment hotel, which exceeds four storeys and not more than fifty feet in height (excepting all buildings for which specifications and plans have been heretofore approved by the proper authorities), and every other building the height of which exceeds fifty-five feet or more than four stories in height, shall be built fireproof within the first fire limits, that is to say—

Buildings
named

Three storeys

Four storeys

Fifty-five feet
or more than
four stories
in height

2. They shall be constructed with walls of brick, stone, Portland cement concrete, iron or steel in which wood beams or lintels shall not be placed, and in which

Fireproof
construction
stated

Wrought iron or steel beams the floors and roofs shall be constructed with rolled wrought iron or steel floor beams, spaced not more than five feet on centres, for stores, warehouses and factory buildings, and for all other buildings not more than eight feet on centres, and otherwise so arranged as to spacing and length of beams that the load to be supported by them, together with the weights of the materials used in the construction of the said floors, shall not cause a greater deflection of the said beams than one-thirtieth of an inch per foot of span under the total load.

Tie-rods

The beams shall be tied together at intervals of not more than eight times the depth of the beam with suitable tie-rods.

Floor between filling beams

3. Between the floor and roof beams shall be placed brick arches springing from the lower flanges of the steel beams, or the spaces between the beams may be filled with hollow tile arches of hard burnt clay or porous terra-cotta, or arches of Portland cement concrete, plain or reinforced with metal, or such other fireproof composition may be used, provided that in each and all cases the strength and method of construction shall conform to the requirements of Section 107 of this By-law.

Material

Stairs

4. The stairs and staircase landings shall be constructed of brick, stone, Portland cement concrete, iron or steel or a combination of these materials.

Allowed woodwork mentioned

5. No woodwork or other inflammable material shall be used in any of the partitions, furrings or ceilings in any fireproof buildings, excepting, however, that when the height of the building does not exceed ten storeys nor more than one hundred and twenty feet, the doors and windows and their frames and trims, the casings, the interior finish when filled out solidly at the back with fireproof materials, and the floor boards and sleepers directly thereunder, may be of wood, but the space between the sleepers shall be solidly filled with fireproof materials extending up to the underside of the floor boards.

When not over ten storeys, 120 feet high

No building more than ten storeys

6. No building shall exceed ten stories in height above the street level.

7. The inside window frames and sash, doors, trim and other interior finish may be of metal or of wood covered with metal or of such other incombustible material as may be approved by the Commissioners of the City of Edmonton.

Window frames and sash. Inside window frames, etc.

Hall and Permanent Partitions.

8. All hall partitions or permanent partitions between rooms in fireproof buildings shall be built of fireproof material and shall not be started on wood sills, nor on wood floor boards, but be built upon the fireproof construction of the floor and extend to the fireproof beam filling above.

Of fireproof material. To be laid on fireproof material

9. But this shall not preclude the use of wood block under each iron upright or stud in partitions constructed of iron uprights, and lathed with iron, or filled in solidly between the iron studs or uprights with approved fireproof material, provided said wood blocks or cushion which is to allow for the possible lengthwise expansion of the uprights by heat does not exceed in thickness one-tenth of an inch to the foot of the height of said uprights.

Foot blocks

10. The tops of all door and window openings in such partitions shall be at least twelve inches below the ceiling line.

Solid space above doors and window partitions

11. In all fireproof partitions, other than when made of solid brickwork, the opening for doors and windows in same shall be framed on both sides with iron studs or uprights secured at top and bottom to the floor beams, and with like iron horizontals between the said uprights for the window openings and door heads.

12. In all fireproof buildings, other than stores, warehouses, and factories, if exceeding three storeys or forty feet in height, the stair halls, shall be enclosed on three sides of each storey with fireproof material, same as required for elevators, to so form an enclosure the floor area of which shall not be more than three times the united area of the floor openings for the elevators and stairs.

Enclosing of stair halls

Area for enclosure

SECTION 107.

Fireproof Floor Fillings Between Beams.

Common
brick arches

1. Between the wrought iron or steel floor beams shall be placed brick arches springing from the lower flanges of the steel beams.

Rise per foot
of span

2. Said brick arches shall be designed with a rise to safely carry the imposed load but never less than one and one-quarter inches for each foot of span between the beams, and they shall have a thickness of not less than four inches by spans of six feet or less, and eight inches for spans over six feet, or such additional thickness as may be required for the Building Inspector.

How laid

3. Said brick arches shall be composed of good, hard brick or hollow brick of ordinary dimensions laid to a line on the centres, properly and solidly bonded, each longitudinal line of brick breaking joints with the adjoining lines in the same ring and with the ring under it when more than a four inch arch is used. The said arches shall spring from protecting skew-backs of burnt clay resting on and covering the lower flanges of the beams, so as to afford a minimum protection of two inches of solid burnt clay material underneath the flanges, or otherwise entirely encasing the said flanges as provided for in this Section.

The brick shall be well wet and the joints filled in solid with cement mortar. The arches shall be well grouted and properly keyed.

Hollow Tile Arches of Burnt Clay or Terra-Cotta.

Hard-burned
clay or porous
terra-cotta

4. Or the space between the beams may be filled in with hollow tile arches of hard-burnt clay, semi-porous or porous terra-cotta of uniform density and hardness of burn. The shells and webs of hollow tile arch blocks shall be not less than one inch in thickness.

Skewbacks

5. Skew-backs shall be used with all forms of hollow tile arches and be of such form and section to properly receive the thrust of the arches. The shells and webs of the skew-backs shall be not less than one and one-half inches in thickness, except that the portion extend-

ing under the lower flanges of the beams shall be not less than two inches of solid material not interrupted by any interior cavities or spaces.

6. The said arches shall be of a depth and sectional area to carry the load to be imposed thereon without straining the material beyond its safe working load, but the thickness of the shells and webs shall in no case be less than herein required, and the depth shall not be less than one and three-quarter inches for each foot of span, not including any portion of the depth of the tile projecting below the underside of the beams, a variable distance between being allowed of not over six inches in the span between the beams, if the soffits of the tile are horizontal;

Depth per foot
of span for
flat arches

7. But if said arches are segmental, having a rise of not less than one and one-quarter inches for each foot of span, the depth of the tile shall be not less than six inches.

Segmental
arch

8. The joints shall be solidly filled with cement mortar as required for common brick arches and the arch so constructed that the key parts shall always fall in the central portion.

Joints filled
with cement
mortar

9. The shells and webs of all end construction blocks shall abut, one against another.

End construc-
tion

10. The space between the beams may be filled with arches of Portland cement, concrete, plain or reinforced with metal Portland cement concrete, segmental in form, and which shall have a rise of not less than one and one-quarter inches for each foot or span between the beams.

Segmental
in form

11. The concrete shall be not less than four inches in thickness at the crown of the arch and shall be mixed in the proportions required by Section 18 of this By-law. These segmental arches, if reinforced, shall in all cases be reinforced or protected, with steel rods or bars, reticulated or meshed steel, or similar metal weighing not less than one pound per square foot, and having openings not larger than three inches square. Such reinforcing metal, if essential to secure the required strength of the arches, shall be so embedded that the

Thickness at
crown of arch.
Reinforced
with metal

metal is covered by not less than one inch of the concrete; but if used partly or wholly as a centreing for and if not essential to secure the required strength of the arches, the metal centreing need not be wholly embedded in the concrete.

Precaution
against freez-
ing of concrete

12. Concrete shall not be installed in freezing weather: such weather shall be taken to mean a temperature of thirty-two degrees Fahrenheit or lower; concrete shall not be allowed to freeze after being put in place, and, if frozen, shall be removed.

Various Fillings Between Floor Beams.

13. Or between the said beams may be placed solid or hollow burnt clay, brick, or concrete slabs in flat or curved shapes, concrete or other fireproof composition, and any of said materials may be used plain or in combination with wire cloth, expanded metal, wire strands, or wrought iron or steel bars; said metal, if used, to be in all cases so embedded in the fireproof composition or combination that the metal shall be covered by not less than one inch of the fireproof material; but in any such construction, and as a precedent condition to the same being used.

Tests as a
precedent
condition of
use

14. Tests shall be made as herein provided by the manufacturer thereof under the direction and to the satisfaction of the Building Inspector, and evidence of the same shall be kept on file in the Department of Buildings, showing the nature and result of the test.

How tests shall
be made

15. Such tests shall be made by constructing within enclosure walls a platform consisting of four rolled steel beams, ten inches deep, weighing each twenty-five pounds per lineal foot, and placed four feet between the centres, and connected by transverse tie rods, and with a clear span of fourteen feet for the two interior beams and with the outer beams supported on the side walls through their length, and with both a filling between the said beams.

Filling
between beams

16. And a fireproof protection of the exposed parts of the beams of the system to be tested, constructed as in actual practice, with the quality of material ordinarily used in that system and the ceiling plastered below, as in a finished job;

17. Such filling between the two interior beams being loaded with a distributed load of one hundred and fifty pounds per square foot of its area and all carried by such filling; Load

18. And subjecting the platform so constructed to the continuous heat of a wood fire below, averaging not less than seventeen degrees Fahrenheit for not less than four hours, during which time the platform shall have remained in such condition that no flame will have passed through the platform or any part of the same, and that no part of the load shall have fallen through, and that the beams shall have been protected from the heat to the extent that after applying to the underside of the platform at the end of the heat test Fire

19. A stream of water directed against the bottom of the platform and discharged through a one and one-eighth inch nozzle under sixty pounds pressure for five minutes. Water

20. And after flooding the top of the platform with water under low pressure, and then again applying the stream of water through the nozzle under the 60 pounds pressure to the bottom of the platform for five minutes, and after a total load of 600 pounds per square foot uniformly distributed over the middle bay shall have been applied and removed, after the platform shall have cooled, the maximum deflection of the interior beams shall not exceed two and one-half inches. Additional load

21. The Building Inspector may from time to time prescribe additional or different tests from the foregoing for systems of filling between iron or steel floor beams, and the protection of the exposed parts of the beams. Different tests may be prescribed

Any system failing to meet the requirements of the test of heat, water and weight as herein prescribed shall be prohibited from use in any building hereafter erected.

22. Daily authenticated records of the test heretofore made of any system of fireproof floor filling and protection of the exposed parts of the beams may be presented to the Building Inspector, and if the same be satisfactory to said Inspector it shall be accepted as conclusive. Authenticated tests may be accepted

Protection Against Injury by Freezing.

Temporarily
covered over
when necessary

23. No filling of any kind which may be injured by frost shall be placed between said floor beams during freezing weather, and if the filling is placed during any winter month, it shall be temporarily covered with suitable material for protection from being frozen.

Centreing.

When to be
removed

24. Centreing when used in placing fireproof systems between steel floor beams shall not be removed until such time as the mortar or materials have thoroughly set; the time at which such centreing may safely be removed will vary from twenty-four hours to sixty days, depending upon temperature, and other atmospheric conditions of the weather; the time for such removal to be determined by the Building Inspector.

Strength for Fireproof Floor Fillings.

Materials to be
within safe
bearing load

25. All fireproof floor systems shall be of sufficient strength to safely carry the load to be imposed thereon without straining the material in any case beyond its safe working load.

Pipe Openings Through Fireproof Floors.

To be shown
on plans

26. Openings through fireproof floors for pipes, conduits and similar purposes shall be shown on plans filed in the Department of Buildings.

Limited size
for holes after
floors are in

27. After the floors are constructed no opening greater than eight inches square shall be cut through said floors, unless properly boxed or framed around with iron;

Openings to
be filled

28. And such openings shall be filled in with fireproof material after the pipes or conduits are in place.

Roof Domes.

Construction of

29. Nothing in this Section contained shall be deemed to prohibit the construction of roof domes, provided that the materials used therefor are in accordance with

those specified in this Section, and that the unit stresses do not exceed those fixed in Section 138 of this By-law, and that in all respects the construction shall be satisfactory to the Building Inspector.

SECTION 108.

Encasing Interior Columns.

All cast-iron, wrought-iron or rolled steel columns, including the lugs and brackets on same, used for vertical supports in the interior of any fireproof building, or used to support any fireproof floor.

1. Shall be entirely protected with not less than four inches of hard-burned brickwork, terra-cotta, concrete or other fireproof material, without any air space next to the metal, securely applied; but no plaster of paris or lime mortar shall be used for this purpose, nor shall any plaster, whether or not on metal lathing, be considered a part of the covering required. Material for insulation

No single block or unit of insulating material used for column covering shall have a greater vertical dimension than six inches when placed in position, nor shall the shells and webs of hollow tile or terra-cotta blocks be less than one inch in thickness, and these blocks shall be laid up with Portland cement mortar, and the said blocks be suitably tied or anchored together.

2. The extreme outer edges of lugs, brackets and similar supporting metal may project to within seven-eighths of an inch of the surface of the fireproofing. Lugs and brackets

3. The fireproof coverings shall start upon the fireproof floors, and continuously extend to the fireproof ceilings or underside of girders above, and be entirely independent of any ornamental base or capital. Continuous fireproof covering

4. No pipes, wires or conduit of any kind shall be encased in the fireproofing surrounding any column, girder or beam of steel or iron, but shall be placed outside of such fireproofing. Conduits

Jacketing

5. Where the fireproof protection of columns is exposed to damage from the trucking or handling of merchandise, such fireproof protection shall be jacketed on the outside for a height not less than four feet from the floor with sheet metal, or with vertical strips of wood; and if the wood be used for such purpose the vertical strips shall be sufficiently separated from each other always to show that the woodwork of the guard has been placed entirely on the outside of the fireproof material which encases the metal column.

Encasing Exposed Sides and Bottom and Top Plates and Flanges of Girders and Beams.

Girders,
material and
thickness of
insulation

6. The exposed sides of wrought-iron or rolled steel girders supporting walls, iron or steel floor beams, or supporting floor arches or floors, shall be entirely encased with hard-burned clay, porous terra-cotta, concrete or other fireproof material not less than four inches in thickness, and the bottom and top plates and flanges of such girders shall have not less than two inches in thickness, of such insulating material.

Beams,
material and
thickness of
insulation

7. The bottom and top plates and flanges of all wrought iron or rolled-steel floor and roof beams, and all exposed portions of such beams below the abutments of floor arches or filling between the floor beams shall be entirely encased with hard-burned clay, porous terra-cotta, concrete or other fireproof material, such encasing material to be not less than two inches in thickness.

Securely
attached

8. All encasing material to be securely attached to the girders and beams.

The shells and web of hollow tile blocks shall be not less than one inch in thickness, and shall be laid up with Portland cement, mortar, and the said blocks be suitably tied or anchored together.

Encasing Interior Columns and Girders in Non-Fireproof Buildings.

Material and
thickness of
insulation

9. In all non-fireproof buildings where iron or steel structural metal members are incorporated in the construction of the building said iron or steel columns,

girders, beams, and other structural metal shall be encased as before described in this Section, except that the thickness of such insulating material may be not less than two inches.

PART XXI.

IRON AND STEEL CONSTRUCTION

SECTION 109.

Skeleton-Constructed Buildings.

1. Where columns are used to support iron or steel girders carrying enclosure walls, the said columns shall be of cast iron, wrought iron, or rolled steel, and on their exposed surfaces be constructed to resist fire by having a casing of brickwork not less than eight inches in thickness on the outside surfaces, not less than four inches in thickness on the inside surfaces, and all bonded into the brickwork of the enclosure walls. Columns

2. Between the said enclosing brickwork and the columns, there shall be a space of not less than two inches, which space shall be filled solidly with liquid cement grout as the courses of brickwork are laid. Encasing of columns

3. The exposed sides of the wrought-iron or steel girders shall be similarly covered in with brickwork not less than four inches in thickness on the outer surfaces and tied and bonded, but the extreme outer edge of the flanges of beams or plates or angles connected to the beams, may project to within two inches of the outside surface of the brick casing, if concrete is used, four inches on flat surface and two inches on flanges. Encasing outside surfaces of girders

4. The inside surfaces of girders may be similarly covered with brickwork, or if projecting inside of the wall they shall be protected by terra-cotta, concrete or other fireproof material not less than four inches in thickness. Encasing inside surfaces of girders

5. Girders for the support of the enclosure walls shall be placed at the floor line of each storey. Girders required at each storey

The skeleton steel frame of a building shall be independent from that of an adjoining building, and the frame of one building shall not be bolted or riveted in any manner to the frame of any other building.

SECTION 110.

REINFORCED CONCRETE CONSTRUCTION REINFORCED CONCRETE DEFINITION.

Reinforced
cement con-
struction.
definition of

1. (B). By reinforced concrete is meant concrete in which steel is embedded in such a position that it shall resist all tensile stresses and assist in the resistance of shear along proper structural lines so that the stresses in the combination can be ascertained by computation and verified by tests.

Mixing and
handling of
cement

The concrete shall be mixed in such proportion and so handled that after it is placed in the forms, all voids in the aggregate will be filled with mortar and all voids in the mortar filled with cement. Thirty (30) days after mixing, it shall develop a crushing strength of two thousand (2,000) pounds per square inch, by testing a six (6) inch cube.

Requirements for Drawing:

Working plans
to be filed with
the Inspector
of Buildings

2. Before a permit shall be issued for a reinforced concrete building or structure, complete working drawing details and specifications shall be filed with the Department of Buildings, giving the size and location of members, the size and position of reinforcing rods, stirrups, bent rods and any other information necessary for the proper calculation of the structure or building. The Department of Buildings reserves the right to demand that the owner, architect or engineer submit a certified copy of such computation or stress sheets for examination upon application for a building permit.

Granting of
permit does
not pass the
construction

The Department of Buildings, in granting a permit to erect any reinforced concrete structure, does not, in any manner, pass the construction until after tests have been made of the actual construction to their satisfaction.

Reinforced Concrete Unit Stresses.

Unit stresses
not to exceed
this table

3. The following unit working stresses shall not be exceeded:

Iron in Tension	12,000 lbs. per sq. inch
Medium Steel in Tension	16,000 lbs. per sq. inch
High Carbon Steel in Tension	18,000 lbs. per sq. inch

Cold Twisted Medium Steel in

Tension	18,000 lbs. per sq. inch
Steel to resist Diagonal Tension,	10,000 lbs. per sq. inch
Concrete in Direct Compression,	500 lbs. per sq. inch
Concrete in Direct Compression (Spiral Reinforced Columns)	650 lbs. per sq. inch
Concrete-Extreme Fibre in Com- pression	700 lbs. per sq. inch
(As determined by the straight line formula)	
Bond stresses for Plain High Car- bon Bars	50 lbs. per sq. inch
Bond Stresses for Plain Low Car- bon Bars	70 lbs. per sq. inch
Bond stresses of Twisted or De- formed Bars	100 lbs. per sq. inch
Concrete in Diagonal Tension..	40 lbs. per sq. inch

Note.—The compressive stress in the total shall not exceed the product of the compressive stress in the concrete multiplied by the elastic modulus of the steel and divided by the elastic modulus of the concrete.

Designs for Slabs, Beams and Girders.

4. All reinforced concrete work shall be designed in accordance with standard engineering practice and the following assumptions:

Design of
reinforced
concrete

That the ratio of moduli of elasticity of concrete to steel is one (1) to fifteen (15); That the adhesion of the concrete to the steel makes the two materials act together; That tensile stresses are taken by the steel and that the stress strain curve of concrete in compression is a straight line.

Beams, slabs and girders shall be calculated as continuous unless constructed so as to act as simple beams. When continuous for uniform loads, the bending moment at the centre shall be figured as not less than $\frac{WL}{10}$ for the intermediate spans and $\frac{WL}{9}$ for the end spans, provided at least sixty-six (66) per cent. as much reinforcement is provided at the top over supports as at the centre of the member; and the reinforcement extends beyond the support a sufficient distance to ensure proper bond.

Continuous
beams, slabs
and girders

Percentage of
steel in beams
and girders

In all cases, however, beams and girders which are built monolithic at the supports shall have at least twenty (20) per cent., as much steel in the top over supports as at the centre. For concentrated loads on continuous beams or girders, the bonding moment at the centre shall be calculated as for a simple beam and this moment may be reduced twenty (20) per cent. for intermediate spans or ten (10) per cent. for end spans.

Where differ-
ent spans
adjoin

Where a short span adjoins a long span and one-half ($\frac{1}{2}$) of the short span considered as a cantilver cannot produce a bonding moment which will develop the strength of the reinforcement over the supports, the long span shall be considered as an end span.

Span of simple
girders, beams
or slabs

For simple girders, beams or slabs the span shall be taken as the clear span and for continuous girders, beams or slabs, the span shall be taken as the distance between centres of support.

Limiting Width of Flange in Tee Beams.

Limit of flange
in Tee beams

5. When beams are made monolithic with the floor slab a portion of the floor may be assumed as acting in flexure in combination with the beam.

The width of the slab so acting in flexure is to be governed by the shearing resistance between slab and beam, but limited to a width equal to one-third ($\frac{1}{3}$) of the span length of the beams between supports and also limited to a span length of three-quarters ($\frac{3}{4}$) of the distance from centre to centre between beams.

No part of the slab shall be considered as a portion of the rib, unless the slab and rib are cast at the same time.

Slabs and
girders to be
reinforced
with rods

Where reinforced concrete girders support reinforced concrete beams, the portion of the floor slab acting as flange to girder, must be reinforced with rods near the top, at right angles to the girders to enable it to transmit local loads directly to the girder and not through the beams.

Web Stresses.

Web stresses

6. Where the diagonal tension exceeds forty (40) lbs. per square inch, additional web reinforcement of approved design shall be used.

Distance of
which stirrups
shall be placed

Stirrups shall not be placed further apart than two-thirds ($\frac{2}{3}$) D., if they are considered as addition to the

shearing resistance. In no case shall the shear exceed one hundred and twenty-five (125) pounds per square inch.

When reinforcement is used to increase the unit shear, the proportion of the unit shear taken by the concrete shall not exceed forty (40) lbs. per square inch, and the reinforcement shall be sufficient to take the remainder. If unattached stirrups are used they shall pass under the main reinforcing bars.

Arrangement
of reinforcement

There shall be sufficient anchorage to develop the stirrups above the neutral axis of the beams without exceeding the bond stresses specified. If the stirrups are attached to the reinforcing bars the connection must be sufficient to develop the elastic limit of the steel without causing slipping along the main bars.

Anchorage

If the reinforcing rods are bent to approximately forty-five (45) degrees and are spaced no further apart than "d" or if the bars are bent at the one quarter ($\frac{1}{4}$) points, they may be figured as shear members in providing for the excess shear over forty (40) pounds per square inch. The notation "d" shall be effective depth.

Square and Rectangular Slabs.

7. For square slabs with two ways reinforcements, the bending moment at the centre of the slab shall be not less than $\frac{WL^2}{20}$ for intermediate spans, and $\frac{WL'}{18}$ for the end spans.

Span and rectangular slabs

The moment over supports shall be not less than $\frac{WL^2}{30}$ and the sum of the moments over one support and at the centre of the span shall be taken not less than $\frac{WL^2}{10}$ in which above formula "W" is the load per lineal foot and "L" the length of span.

For square or rectangular slabs the distribution of the loads in the two directions, shall be inversely as the cubes of the two dimensions.

Flat Slab Type of Construction.

8. The type of construction referred to in this section is a design of reinforced concrete slab supported by reinforced or structural steel columns with flaring heads and in which beams and girders are eliminated.

Type of
construction

This construction shall be figured with a bending moment in any quadrant over the column head of not less than $\frac{WL^3}{.7}$ in foot pounds, in which W equals total weight per square foot, dead and live load. L equals length in feet of a side of an equivalent square in rectangular panels and the side of a square in square panels. This length shall be taken centre to centre of columns. In calculating the required area of steel in each band at the centre of the span, the length of span of band shall be taken centre to centre of columns in the above formula. The bands of reinforcement shall be made approximately seven-sixteenths (7-16) L in width, in solving for the required area of steel over the column head, the distance from the compressive face of the plane of steel assumed shall be from the centre of gravity of all the steel to the underside of slab. Any additional steel required over the column head shall extend beyond the centre of column a distance not less than three-tenths (.3) L in all directions.

Radial bars

The radial bars may be assumed as resisting tension provided they are carried a distance horizontally not less than one-tenth (.1) L each way before bending downward; further, that the allowed area of each radial bar figured to resist tension shall constitute not over one-half ($\frac{1}{2}$) the area of any single band of continuous reinforcement.

Spiral columns diameters of

The diameter of interior spirally reinforced concrete columns shall never be less than one-thirteenth (1-13) L for floors, or one-fourteenth (1-14) L for roofs, and the diameter of column head shall never be less than two tenths (.2) L and this head if constructed of concrete shall be dropped below the under side of slab at least three (3) inches at the outer edge.

Thickness of panels

Square panels shall never be less in thickness than one forty-fifth (1-45) of the diagonal distance from centre to centre of columns, for floors, and not less than one-fiftieth (1-50) for roofs.

Rectangular panels

Rectangular panels shall never be less in thickness than one forty-fifth (1-45) of the diagonal span of an equivalent square centre to centre of columns for floors, and one-fiftieth (1-50) for roofs.

Minimum thickness

The minimum thickness of slabs shall be six and one-half ($6\frac{1}{2}$) inches for floors and six (6) inches for roofs.

The required percentage of steel in a single layer of bars shall not exceed forty-four one-hundredths (44-100) of one per cent. for medium steel, or thirty-six one-hundredths (36-100) of one per cent. for high carbon steel. In any flat slab type of construction provision shall be made to take care of circumferential stresses.

Percentage of slab

In all buildings hereafter to be erected all interior columns shall have spiral and vertical reinforcement or shall have columns built of structural steel encased in concrete and the slab steel shall be so placed that it comes near the top of slab at the columns and shall be held firmly in position in such a manner that the bars cannot be displaced. A spacing and clamping device satisfactory to the Department of Buildings shall be used for the floor slab steel.

Buildings hereafter erected

In end or wall panels in which wall columns of reinforced concrete with heads are omitted, allowance shall be made for the increased moments. These moments shall be assumed to be ten (10) per cent. greater than the moments in the interior panels.

Wall panels

If wall columns are used they shall be calculated to carry one-half ($\frac{1}{2}$) the panel load plus any other loads and if necessary the column shall be designed for eccentric loadings. The wall beams shall be designed to carry one-third ($\frac{1}{3}$) of the panel load plus any other loads. The minimum width of wall beams of reinforced concrete shall be twelve inches and never less than one-half ($\frac{1}{2}$) the depth of beam.

Wall columns

Reinforced Concrete Columns.

9. Reinforced concrete column shall not exceed in length fifteen (15) times the least side or diameter and where such columns exceed twelve (12) times the least diameter or side, the allowable compression of the concrete shall be taken as five hundred (500) pounds multiplied by the least side or diameter of the column in inches and divided by the unsupported length in feet.

Reinforced concrete columns

For columns subject to eccentric loading or bending of an indeterminate amount, the above stress shall be reduced at least twenty (20) per cent. When the bending stress in a column can be definitely determined, the combined bending and direct stress shall not exceed five hundred (500) pounds per square inch.

Eccentric loading

Columns with
longitudinal
rods

Columns with longitudinal rods shall have at least one (1) square inch of steel in the total area, and not less than four (4) rods; and rods shall not be used of a less diameter than one-half ($\frac{1}{2}$) inch. The area of the longitudinal rods shall not be less than one-half ($\frac{1}{2}$) of one per cent. of the required cross section area of the column and shall not exceed four (4) per cent. of the effective cross sectional area of the column. The longitudinal rods must be tied together to resist outward flexure at intervals not greater than the least width or diameter of column.

Steel hoops

The steel hoops shall not be less than one-quarter ($\frac{1}{4}$) inch diameter and spaced not more than twelve (12) inches apart.

Spiral Reinforced Columns.

Section nine
modified

10. Where the reinforcement consists of vertical bars and spiral hooping, the concrete shall not be stressed beyond six hundred and fifty (650) pounds per square inch, provided that the amount of vertical reinforcement be not less than the spiral reinforcement nor greater than five (5) per cent. of the area within the hooping; that the percentage of spiral hooping be not less than one-half ($\frac{1}{2}$) of one per cent. and not to exceed one and one-half ($1\frac{1}{2}$) per cent.; that the pitch of the spiral be uniform and not greater than one-eighth ($\frac{1}{8}$) of the diameter of the column nor greater than three (3) inches; that the spiral be secured to the vertical at every intersection to ensure the maintaining of its form and position; that the verticals be spaced so that their distance apart, measured on the circumference be not greater than nine (9) inches or one-eighth ($\frac{1}{8}$) the circumference of the column within the hooping. In such columns, the action of the hooping may be considered equal to two and four-tenths (2 $\frac{4}{10}$) times its amount taken as vertical reinforcing. No part of the concrete outside of the hooping shall be considered as a part of the effective column section.

Spiral rein-
forced columns

Structural Steel Columns Encased in Concrete.

11. Where structural steel columns, in steel frame structure or structures in which the loads are transmitted directly to steel column, are encased in concrete, the

structural steel shall be proportioned to carry the total dead load and fifteen-sixteenths (15-16) of the total live load that can be transmitted to same and the concrete shall be proportioned to carry one-sixteenth (1-16) of the live load only; and in no case shall the unit stress in the structural steel exceed sixteen thousand (16,000) pounds per square inch of net steel section or shall the unit stress in the concrete exceed five hundred (500) pounds per square inch of net concrete section.

Proportion
of steel

In columns of this design the concrete shall be reinforced with spiral hooping of not less than one-half ($\frac{1}{2}$) of one (1) per cent.

The pitch of the spiral shall be uniform and not greater than one-tenth (1-10) of the diameter of the hooping nor greater than three (3) inches. The spirals shall be secured at each intersection in such a manner as to ensure the maintaining of its form and position.

Spiral pitch to
be uniform

No part of the concrete outside of the hooping shall be considered as a part of the effective column section.

In latticed or open web structural columns it shall not be necessary to use the hooping specified above.

In buildings with columns of this design the height shall be limited to ten storeys or one hundred and twenty feet in height, provided that the other requirements of this By-law for buildings of this height are complied with.

Latticed
columns

All structural steel which is to be encased in concrete shall be wrapped with wire in such a manner as to ensure the bonding of the concrete to the steel and no structural steel which is to be encased in concrete shall be painted or oiled. Before encasing structural steel in concrete, scale or rust of any appreciable amount shall be removed.

Steel wrapped
with wire

Column Splices.

12. In all buildings hereafter to be erected the column splices shall be made in such a manner as to transmit the stresses for which they are designed. The connections shall be made by turnbuckle, sleeve nut, slip sleeve or by lapping the rods and bolting together in such a manner that the stresses will be transmitted properly. If the device used required the rod to be threaded the effective area shall be taken at the root of the thread. If a slip sleeve is used the rods must have their

Column splices

ends milled or equal. The diameter of the sleeve to be not over one-sixteenth (1-16) inch larger than the diameter of the rod. Where the bearing is made metal to metal the contact shall be made so as to transmit all stresses properly. Where the rods are in tension due to wind stresses, the connection shall be made by means of a positive connection. The use of pipe sleeve connections is prohibited unless they fit the rods as above described. All column steel shall set directly in line with the steel below and must be constructed in such a manner as to eliminate any short bends in the steel. The steel reinforcement shall be spliced at such a point above the floor that the bond stress in the rod is developed enough to carry the increased load transmitted to it.

Curtain Walls in Skeleton Construction Buildings.

Curtain walls 13. Buildings having a complete skeleton construction of steel or of reinforced concrete construction, or a combination of both, may have exterior walls of reinforced concrete eight inches thick, provided, however, that such walls shall support only their own weight and that such walls shall have steel reinforcement of not less than three-tenths (.3) of one per cent. in each direction vertically and horizontally, the rods spaced not more than twelve (12) inch centres and wired to each other at each intersection. All bars shall be lapped for a length sufficient to develop their full stress for the allowable unit stress for adhesion. Additional bars shall be set around openings, the verticals wired to the nearest horizontal bars at top and bottom of openings and the horizontals shall be wired to the nearest vertical bars.

Proper placing of steel rods The steel rods shall be combined with the concrete and placed where the combination will develop the greatest strength and the rods shall be staggered or placed and secured so as to resist a pressure of thirty (30) pounds per square foot, either from the exterior or from the interior on each and every square foot of each wall panel.

Minimum Thickness of Slabs.

Thickness of slabs 14. Reinforced concrete slabs shall not be less than four (4) inches thick for floors and three (3) inches for roofs.

Fireproofing.

15. For the purpose of fire protection the outer surface of reinforcing steel shall be kept away from the surface of the concrete. Fireproofing

Two (2) inches in columns and girders.

One and one-half ($1\frac{1}{2}$) inches in beams.

Three-quarters ($\frac{3}{4}$) inch in slabs.

No reinforcing steel not protected from fire shall be considered as adding to the strength of the construction.

Lime or hard wall plaster shall not be considered as a fireproofing material in reinforced concrete work.

System.

16. No system of reinforced concrete shall be used which is not capable of design and investigation in accordance with the formula and principles laid down in this By-law. System

Proportion for Mixing Reinforced Concrete.

17. All reinforced concrete shall be mixed in the proportion of one (1) part Portland Cement to two (2) parts clean, sharp sand and not more than four (4) parts aggregate. Where slag or other similar material is used, the proportion of aggregate shall be reduced in order to have the voids properly filled. In no case shall more than two (2) parts sand be used to one part (1) cement and all mixing shall be done by machine, except where limited quantities are required or where the conditions of the work make hand mixing preferable; hand mixing to be done only when approved by the Inspector of Buildings. In all mixing the separate ingredients shall be measured and shall be thoroughly mixed and must be uniform in color, appearance and consistency before placing. Proportion for mixing concrete

Cement, Sand and Inerts.

18. (a) Cement.—Only Portland cement shall be used which conforms to the Standard Specifications of the American Society for Testing materials, or that approved by the Canadian Society of Civil Engineers. Cement, sand and aggregate

Tests

All cement shall be tested in lots of not more than one (1) car load, and the Inspector of Buildings may at any time demand that certified copies of all test records be submitted for examination.

The minimum requirements for tensile strength for briquettes one (1) inch square in section shall be:

Neat Cement.

24 hours in moist air	175 lbs.
7 days (one day in air, six in water)	500 lbs.
28 days (one day in air, twenty-seven in water)	600 lbs.
One Part Cement, Three Parts Standard Sand.	
7 days (one day in air)	200 lbs.
28 days (one day in air, twenty-seven in water)	275 lbs.

Sand.

Quality of materials

(b) The sand used shall be clean, coarse, sharp, natural sand, preferably a mixture of coarse and fine grains with coarse grains predominating. The maximum percentage of clay or loam shall not exceed five (5) per cent., and at least sixty (60) per cent. shall be retained on a fifty (50) mesh sieve and the sand shall contain at least ninety (90) per cent. silica.

Aggregate.

Aggregate

(c) The aggregate shall consist of hard broken stone, free from dust, clean gravel, slag or similar material crushed and screened to pass a one (1) inch ring and rejected on a one-quarter ($\frac{1}{4}$) inch ring. Both sand and aggregate shall be subject to the approval of the Inspector of Buildings, which may demand that any material in question be tested at the expense of the owner or owners, in an approved testing laboratory and the certified results submitted to the Inspector of Buildings to aid in forming an opinion as to the fitness or unfitness of the material for the purpose intended.

Steel in Concrete.

Testing of steel

19. All steel shall be tested by an approved testing laboratory and the Inspector of Buildings may, at any time, demand that certified copies of all tests records be

submitted to it for examination. All steel for reinforcing purposes shall comply with the "Standard Specifications" governing the chemical and physical properties of concrete reinforcing bars, as adopted by the Association of American Steel Manufacturers, 1910.

"The above modified:

All reinforcing steel not rolled from billets shall be rolled from standard section Tee rails, and shall comply with the physical tests specified in Paragraph 2 of the above mentioned Standard Specification. A complete physical test shall be made, by an approved testing laboratory, of each size of bar to be applied by the manufacturer on the contract from each ten (10) ton lot or loss.

Kind of steel

These tests and materials shall be subject to the regulations prescribed in paragraphs, 2, 4, 5a, 6d, 7, 7e, 7f, 9 and 10 of the above mentioned specifications.

Hot twisted bars of high carbon steel, shall be twisted with one complete twist in a length equal to not more than twelve (12) times the thickness of the bar.

The Inspector of Buildings may demand the owner, builder, contractor, sub-contractor or foreman to make, or cause to be made, bending tests in the field, on all grades of reinforcing steel, when in their opinion there is any doubt as to whether the reinforcing steel is up to the standard of these regulations.

Tests to be made on the order of the Inspector of Buildings

These bending tests shall be those specified in the above mentioned "Standard Specifications."

Placing Concrete and Steel.

20. In filling in concrete around reinforcing steel, the concrete must be worked continuously with suitable tools, as it is put in place. Filling the column completely and puddling afterwards will not be permitted. In placing the concrete the work shall be so laid out that partially set concrete will not be subjected to shocks from the wheeling and handling material over it. Concrete placed in warm weather shall be drenched with water twice daily, Sunday included, during the first week after being put in place.

Placing cement and steel

When it is not possible to cast an entire structure in one operation, the work should be stopped; for columns at the underside of girders; for girders at a point midway between supports unless a beam should occur at this

When to stop work

point, in which case the joint should be offset a distance equal to twice the width of the beam; for slabs at the centre of the span.

When work is resumed

When work is resumed the concrete previously placed shall be cleared of all foreign material, drenched and slushed with a mortar composed of one (1) part cement and one (1) part sand.

Beams and girders shall not be constructed over freshly placed columns without permitting a period of ten (10) hours to elapse to provide for settlement of shrinkage in columns.

All work to be free from foreign matter

Before resuming work the top of the column shall be cleansed of foreign matter, and if the column has become hard, the top shall be wet and slushed with the cement grout above specified.

Pouring of beams and slabs

When beams are designed as Tee beams, the slab shall be poured at the same time as the web.

Means satisfactory to the Inspector of Buildings shall be used to hold the reinforcing steel in its proper position by means of a spacing and clamping device.

Disposition of steel

The longitudinal steel in beams and girders shall be so disposed that there shall be a thickness of concrete between the separate piece of steel of not less than one and one-half ($1\frac{1}{2}$) times the maximum sectional dimensions of the steel.

When steel is used in the compressive side of beams and girders, the rods shall be tied in accordance with requirements of vertical reinforced columns, with stirrups connecting with the tension rods of the beams or girders.

Freezing Weather.

Heating of materials

21. When concrete is placed in freezing weather, the materials must be heated and such provisions made that the concrete can be put in place without freezing.

Temperature

The use of frozen lumpy sand or aggregate depending on hot water used in mixing to thaw it out will not be permitted. All reinforced concrete shall be kept at a temperature above freezing for at least forty-eight (48) hours after being put in place. All forms under concrete placed in freezing weather shall remain until all evidences of frost are removed from the concrete and the natural hardening of the concrete has proceeded to

the point of safety. All such work after centring is removed shall be given the physical test prescribed in Section 23.

Centring and Forms.

22. All forms shall be built in a substantial manner, plumb and true, with tight joints, so that no appreciable part of the concrete mixture can escape, and shall be so supported and braced that they will carry all the usual loads which may come upon them without springing or deflection.

Centring and forms

An opening shall be left at the bottom of all column forms for cleaning and adjusting the steel. This opening shall not be closed until all is in readiness for pouring the columns. The forms shall be carefully cleaned just before concreting, and all chips, ice and other foreign matter removed.

Provision for cleaning

Before removing the shores under any beam or girder the columns supporting it shall be stripped, so that the columns may be examined on all sides. Pouring columns in chases left in the masonry shall not be allowed.

Removing of shores

Provided ample shores are used to carry the full weight of the floor, column forms may be removed in not less than four (4) days after pouring.

Removing of forms

The time which shall elapse before removing the shores under beams and girders varies with the design and condition of the weather, but in no case shall they be removed in less than three (3) weeks after pouring, provided that the beams and girders carry their own weight only. Where beams and girders carry construction loads from above, sufficient shoring shall be left in place to carry these loads until the completion of the work.

Time

The supports under floor slabs shall not be removed in less than ten (10) days after pouring, but this clause is not intended to prevent removing the joists and lagging in less time, provided the slabs are kept properly shored.

Removal of supports

Inspection and Tests.

23. When any reinforced concrete is used in construction, the owner shall provide for the inspection of cement and inerts, as required by the Inspector of Buildings, unless otherwise authorized in writing by

Inspection and tests

the Inspector of Buildings, the owner shall also provide a special inspector of the work who shall be satisfactory at all times to the Inspector of Buildings, and who shall be on the work continually during the mixing and the placing of concrete and steel and the removal of forms. Such special inspector shall make daily written reports to the Inspector of Buildings on the progress of the work.

Special
inspection

Before reinforced concrete work is started, the owner shall name in writing the special inspector, and such special inspector shall pass such examination as may be required by the Inspector of Buildings to determine his competency.

Testing of
floors

Before a building containing reinforced concrete floors is occupied, the floors shall be tested by applying a load equal to two and one-half ($2\frac{1}{2}$) times the figured live load to such parts as the Inspector of Buildings or his deputies may select. The floor shall sustain this load for at least twenty-four (24) hours, without cracks or other evident signs of failure.

Concrete Block Construction.

Concrete
building
blocks

24. (a) Concrete building blocks may be used for building three (3) storeys or less in height, where such blocks have passed the test hereinafter specified.

Concrete shall be composed of at least one (1) part Portland cement and not more than three (3) parts sand, and not to exceed five (5) parts crushed rock or gravel.

Composition

The cement, sand and aggregate shall comply with the requirements specified in Section 18 for these materials. In no case shall the walls or webs of the blocks be less in thickness than one-quarter ($\frac{1}{4}$) of the height. The hollow space in any block shall not exceed thirty-five (35) per cent.

Thickness
of walls

(b) The thickness of walls for any building when concrete blocks are used shall be the same as the thickness of a brick wall, except where the allowable crushing strength of such wall is exceeded; then the thickness must be increased. An eight (8) inch block shall be considered one (1) brick thick in wall measurements.

Building block
facing

Where the face of a building is of concrete building block and the backing is of brick the facing of concrete blocks must be well bonded to the brick, with headers

projecting four (4) inches into the brick work, every fourth course being a header course. All walls where blocks are used shall be laid with Portland cement mortar.

(c) All concrete blocks before being used in construction in buildings shall have obtained the age of at least four (4) weeks. Such blocks shall develop a crushing strength of fifteen hundred (1,500) pounds per square inch at twenty-eight (28) days.

Crushing strength

Where girders, beams or joists rest on the walls so that the end reaction exceeds four thousand (4,000) pounds the blocks below such concentrated loads must be made solid a distance below and to the side, as may be required by the Inspector of Buildings.

When blocks must be solid

Concrete sills and lintels spanning over four (4) feet six (6) inches shall be reinforced and the ends rest on solid blocks or solid walls.

Cement sills and lintels

Test of Concrete Blocks.

25. All concrete materials made of Portland cement sand and crushed rock or gravel, or cement and sand, which are larger than the standard brick size, and which are molded and then set in place in the structure, shall come under the provisions as follows:

Test of blocks

(a) Application for Tests.—Before any concrete block is used in a building an application for its use and for a test of the same shall be filed with the Inspector of Buildings. A description of the materials and the manufacture of same shall be filed with the application.

Application for test

(b) Tests to be Made.—The concrete blocks shall be subject to the following tests: Compression, transverse and absorption.

All such tests shall be made in some laboratory of recognized standing under the supervision of a representative of the Inspector of Buildings. The tests shall be made at the expense of the owner.

Testing to be at expense of owner

(c) For the purpose of these tests at least ten (10) samples of test pieces shall be provided. Such samples shall be selected from stock by a representative of the Inspector of Buildings, or may be made in the presence of such representative. The samples shall be of the regular size as used in construction, except that when the samples are too large to use in the ordinary testing machines, in which case smaller sized blocks

Selection of samples

shall be made for testing under the direction of a representative of the Inspector of Buildings

Series in
which tests
shall be made

(d) Tests shall be made in series of at least three (3), composed of four (4) samples each. The transverse test shall be made on full size samples. Half size samples may be used for the crushing test, and the remaining samples are to be kept in reserve in case exceptionally high values are shown by these tests which may make it necessary to discard certain of them. All samples must be marked for identification and comparison. The weight of the material in the block per cubic foot shall be determined.

Transverse
test

(e) Transverse Tests.—The Transverse test shall be made as follows: The samples shall be placed flatwise on two (2) rounded knife edge bearings set parallel and seven (7) inches apart. A load is then applied on top of the test piece midway between the supports, and transmitted through a similar rounded knife-edge until the rupture of the sample. The modulus of rupture shall be determined by multiplying the total breaking load in pounds by twenty-one (21) minus Three (3) times the distance between the supports in inches) and then dividing the result thus obtained by twice the produce of the width in inches by the square of the depth in inches. Allowance shall be made in figuring the modulus of rupture for the hollow spaces in the test piece.

$$\text{Modulus of rupture } R = \frac{3WL}{2B^2}$$

Compression
test

(f) The Compression Test.—The compression test shall be made as follows: Samples shall be cut in blocks in such a manner as to contain the full web section. The samples must be carefully measured, then bedded flatwise in plaster of Paris to secure uniform bearing in the testing machine, and then crushed. The total breaking load is then divided by the area of square inches in compression. Deduction is to be made for hollow spaces.

Absorbition
test

(g) Absorption Test.—The absorption test must be made as follows: The block is first to be thoroughly dried and weighed. It is then placed in water to a depth of one-half ($\frac{1}{2}$) inch face downward. After being in the water for thirty (30) minutes, the block is again weighed, then immersed in water for four (4) hours and weighed again. It is then immersed for

forty-eight (48) hours and the result noted. After weight is taken the compressive strength of the block while still wet is determined as provided above.

Requirements and Condition of Approval—Revocal of License.

26. (a) The following requirements must be complied with in order to secure an acceptance of the material. Requirements

The modulus of rupture for concrete blocks at twenty-eight (28) days old shall average one hundred and fifty (150) and must not fall below one hundred (100) in any case.

The ultimate compressive strength at twenty-eight (28) days must average fifteen hundred (1,500) pounds per square inch and must not fall below seven hundred (700) in any case.

The percentage of absorption (being the weight of water absorbed divided by the weight of the dry sample) must not average higher than seven (7) per cent. and must not exceed ten (10) per cent. in any case.

The reduction of compressive strength must not be more than thirty-three and one-third (33 1-3) per cent. except that when the lower figure is still above one thousand (1000) pounds per square inch, the loss in strength may be neglected.

(b) The approval of any material is given only under the following conditions:

A plant for the production of the material must be in full operation when the official tests are made.

The names of the firms or corporations and the responsible officers must be placed on file with the Inspector of Buildings and changes in same promptly reported.

Names of firms
to be registered

The Inspector of Buildings may require full tests to be repeated on samples selected from the open market, when in their opinion there is any doubt as to whether the product is up to the standard of these regulations and the manufacturer must submit to the Inspector of Buildings once in at least every four months a certificate of tests showing that the average resistance of three specimens to cross breaking and crushing are not below the requirements of these regulations. Such tests must be made by some laboratory of recognized standing, on samples selected either by the Inspector

of Buildings, or the laboratory, from materials actually going into construction, and not ones furnished by the manufacturer. In case the results made under the preceding divisions show that the standard of these regulations is not maintained, the approval of the Inspector of Buildings to the manufacturer of said blocks shall be at once suspended and revoked.

Limit of
certificate of
approval

No certificate of approval shall be considered in force more than four (4) months, unless there be filed with the Inspector of Buildings at least every four (4) months following, a certificate from some reliable physical testing laboratory, showing that the average of the three (3) specimens tested for compression and three (3) specimens tested for transverse strength comply with the requirements of the Building Inspector.

Testing by
manufacturer
or user

Manufacturer and users of any such concrete blocks as are mentioned in this regulation, or either of them, shall at any and all times, have made such test of cement used in making such blocks, or such further tests of the completed blocks, or each of them, at his own expense and under the supervision of the Inspector of Buildings as may be required.

License

(c) A license shall be granted to those intending to manufacture concrete blocks, said license to be revoked for the following causes:

Wilful violation of specifications, laws and ordinances.

Dishonest methods.

Use of improper materials.

SECTION 111.

Steel and Wrought Iron Columns.

Least thickness
of metal

1. No part of a steel or wrought iron column shall be less than three-eighths of an inch thick.

Greatest
unsupported
length

2. No wrought iron or rolled steel column shall have an unsupported length of more than forty times its least lateral dimensions or diameter—

Exceptions

3. Except as modified by Section 137 of this By-law, and also except in such cases as the Building Inspector may specially allow a greater unsupported length.

4. The ends of all columns shall be faced to a plane surface at right angles to the axis of the columns. Ends

5. And the connections between them shall be made with splice plates. Connections

6. The joint may be effected by rivets of sufficient size and number to transmit the entire stress and then the splice plates shall be equal in sectional area to the area of column spliced. Joints

7. When the section of the columns to be spliced is such that spliced plates cannot be used, a connection formed of plates and angles may be used, designed to properly distribute the stress. Connections

8. No material, whether in the body of the column or used as lattice-bar or stay-plate, shall be used in any wrought-iron or steel column of less thickness than one-thirty-second of its unsupported width measured between centres of rivets transversely, or one-sixteenth the distance between centres of rivets in the direction of the stress. Proportional

9. Stay-plates are to have not less than four rivets, and are to be spaced so that the ratio of length by the least radius of gyration of the parts connected does not exceed forty; the distance between the nearest rivets of two stay-plates shall in this case be considered as length. Stay-plates

10. Steel and wrought-iron columns shall be made in one, two or three storey length, and the materials shall be rolled in one length wherever practicable to avoid intermediate splices. In lengths

11. Where any part of the section of a column projects beyond that of the column below, the difference shall be made up by filling plates secured to column by the proper number of rivets. Filling plates

12. Shoes of iron or steel, as described for cast iron columns, or built shoes of plates and shapes may be used, complying with same requirements. Shoes

SECTION 112.

Cast-Iron Columns.

- Least thickness of metal 1. Cast-iron columns shall have a diameter of not less than five inches shell of a thickness not less than three-quarters of an inch.
- Greatest unsupported length
Exceptions 2. Nor shall they have an unsupported length of more than twenty times their least lateral dimension or diameter, except as modified by Section 137 of this By-law, and except the same form part of a stair-case, and also except in such specific cases as the Building Inspector may specially allow a greater unsupported length.
- Quality of material and workmanship 3. All cast-iron columns shall be of good workmanship and material.
- Flanges, seats and lugs 4. The top and bottom flanges, seats and lugs shall be of ample strength, reinforced by fillets and brackets; they shall be not less than one inch in thickness when finished.
The interior space of cast-iron columns shall in no case be filled with any material.
- Ends 5. All columns shall be faced at the ends to a plane surface at right angles to the axis of the column.
- Connections 6. Where cast iron columns are placed vertically one on top of another they shall be securely bolted together at the joints through flanges cast on the columns and a plate between the flanges.
- Square columns 7. If the column is square or rectangular, the top flange shall project not less than two and one-half inches from the outer surfaces of the column on all sides, and the bottom flange of the column immediately above the same shall project as far as the top flange of the column below.
- Flanges 8. If the column is round or many-sided the top flange shall project not less than two and one-half inches at its least projection from the outer surface of the column, and be square or rectangular in shape, and the bottom flange of the column immediately above the same shall be of corresponding shape and project as far as the top flange of the column below.

9. Each flange will be reinforced with a bracket placed centrally on the column, and with fillets both on the bracket and flange. In case the column is placed on the dividing line of the lot upon which the building is to be erected, the flanges on that side only may be omitted.

Round columns

10. Between the joints of cast-iron columns placed vertically over each other there shall be in each case a solid cast-iron plate not less than one and one-quarter of an inch in thickness, of the same dimensions as the flanges of the columns, and planed true on both sides, or a plate of mild steel, not less than five-eighths of an inch thick, may be used instead of the cast-iron plate.

Joint plates

11. The columns shall be bolted together with bolts not less than three-quarters of an inch in diameter passing through the two flanges and the intermediate plate, the bolts being of sufficient length to allow the nuts to be screwed up tightly, and as each column is placed in position the bolts shall also be placed in position and the nuts shall be tightly screwed up.

Bolting

12. One bolt shall be placed at each corner of the plate and flanges, and the number of bolts shall be never less than four. The holes for these bolts shall be drilled to a template.

Number of bolts

13. Where cast-iron columns are placed vertically one on top of the other, the diameters shall be increased not less than one inch for each two storeys below the columns on the two storeys above in the case of round columns, and in the case of square or rectangular columns the same ratio of increase shall follow on at least two sides of the columns in each two storeys below the uppermost two columns of the vertical line. This increase in size shall apply to interior as well as to exterior columns.

Increase in size of columns

14. The core of a column below a joint shall be not larger than the core of the column above and the metal shall be tapered down for a distance of not less than six inches.

Columns of varying diameters resting on top of each other

15. The thickness of metal shall be not less than one-twelfth the pro-diameter of the greatest lateral di-

Thickness of shell portionate to diameter of column

mension of cross section, but never less than three-quarters of an inch.

When thickness is not equal

16. Wherever the core of a cast-iron column has shifted more than one-fourth the thickness of the shell, the strength shall be computed assuming the thickness of metal all around equal to the thinnest part, and the column shall be condemned and rejected if this computation shows the strength to be less than required by this By-law.

Imperfections in casing

17. Wherever blowholes or imperfections are found in a cast-iron column which reduces the area of the cross section at that point more than ten per cent., such column shall be condemned and rejected.

To be drilled to exhibit thickness

18. Cast-iron posts or columns not cast with an open side or back, before being set up in place, shall have a three-eighths of an inch hole drilled in the shaft of each post or column, by the manufacturer or contractor furnishing the same, to exhibit the thickness of the castings; and any other hole or holes of a similar size which the Building Inspector may require, shall be drilled in the said posts or columns by the said manufacturer or contractor at their expense.

Shoes under bottom tier of columns

19. Iron or steel shoes or plates shall be used under the bottom tier of columns when necessary to properly distribute the load on the foundation.

Shoes planed

20. Shoes shall be planed on top.

SECTION 113.

Double Columns.

To support wall above same

1. In all buildings hereafter erected or altered, where any iron or steel column or columns are used to support a wall or part thereof, whether the same be an exterior or an interior wall, and columns located below the level of the sidewalk which are used to support exterior walls or arches over vaults.

Constructed double

2. The said column or columns shall be either constructed double, that is, an outer and an inner column alone to be of sufficient strength to sustain safely the

weight to be imposed thereon, and the outer columns shall be one inch shorter than the inner columns, or such other iron or steel column of sufficient strength,

3. And protected with not less than four inches of hard-burned brick-work, terra-cotta, concrete or other approved fireproof material securely applied, Protected columns

4. Except that double or protected columns shall not be required for walls fronting on streets or courts. Not required for street or court walls

SECTION 114.

Party Wall Posts.

1. If iron or steel posts are to be used as party posts in front of a party wall, and intended for two buildings, then the said posts shall be not less in width than the thickness of the party wall, nor less in depth than the thickness of the wall to be supported above. Width and depth

2. Iron or steel posts in front of side, division or party walls, shall be made perfectly tight between the posts and walls with masonry. Space between posts and walls

3. Intermediate posts may be used, which shall be sufficiently strong, and the lintels thereon shall have sufficient bearings to carry the weight above with safety. Intermediate posts and bearings affected by same

SECTION 115.

Steel and Iron Girders.

1. Rivets in flanges shall be spaced so that the least value of a rivet for either shear or bearing is equal or greater than the increment of strain due to the distance between adjoining rivets. All other rules given under riveting shall be followed. The length of rivets between heads shall be limited to four times the diameter. Rivets in flanges

5. The compression flange of plate girders shall be secured against buckling, if its length exceeds thirty times its width. Secured against buckling

6. If splices are used, they shall fully make good the members spliced in either tension or compression. Splices

Stiffeners

7. Stiffeners shall be provided over supports and under concentrated loads; they shall be of sufficient strength, as a column, to carry the loads, and shall be connected with a sufficient number of rivets to transmit the stresses into the web plate. Stiffeners shall fit so as to support the flanges of the girders. If the unsupported depth of the web plate exceeds sixty times its thickness, stiffeners shall be used at intervals not exceeding one hundred and twenty times the thickness of the web.

SECTION 116.

Rolled Steel and Wrought Iron Beams
Used as Girders.

Separators
and bolts

1. When rolled steel or wrought iron beams are used in pairs to form a girder, they shall be connected together by bolts and iron separators at intervals of not more than five feet.

When
separators to
have two or
more bolts

2. All beams twelve inches and over in depth shall have at least two bolts to each separator.

SECTION 117.

Cast Iron Lintels.

Maximum
span

1. Cast iron lintels shall not be used for spans exceeding eight feet.

Maximum
thickness

2. Cast iron lintels or beams shall be not less than three-quarters of an inch in thickness in any of their parts.

SECTION 118.

Plates Under Ends of Lintels and Girders.

Cast iron or
steel plates

1. When the lintels are supported at the ends by brick walls or piers they shall rest upon cast iron or steel plates of adequate strength by the full size of the bearings.

Loads not to
exceed safe
limits

2. In all cases the safe loads shall not exceed those fixed by Section 138 of this Bylaw.

SECTION 119.

Rolled Steel and Wrought Iron Floor and Roof Beams.

1. All rolled steel and wrought iron floor and roof beams used in buildings shall be of full weight, straight and free from injurious defects. Quality
2. Holes for tie rods shall be placed as near the thrust of the arch as practicable. Holes for tie rods
3. The distance between tie rods in floors shall not exceed eight feet, and shall not exceed eight times the depth of floor beams twelve inches and under. Distance apart for tie rods
4. Channels or other shapes, where used as skew-backs, shall have sufficient resisting moment to take up the thrust of the arch. Shapes when used as skew-backs
5. Bearing plates of metal shall be used to reduce the pressure on the wall to the working stress. Wall bearing plates
6. Beams resting on girders shall be securely riveted or bolted to the same; where joined on a girder, the straps of one-half inch net sectional area shall be used, with rivets or bolts to correspond. Beams secured to girders
7. Anchors shall be provided at the ends of all such beams bearing on walls. Anchors at end of beams on walls

SECTION 120.

Templates Under Ends of Steel or Iron Floor Beams.

1. Under the ends of all iron or steel beams where they rest on the walls, cast iron or steel templates shall be built into the walls. Under ends of beams resting on walls
2. Templates under ends of steel or iron beams shall be of such dimensions as to bring no greater pressure upon the brickwork than that allowed by Section 138 of this Bylaw. Dimensions proportionate to load
3. When rolled iron or steel floor beams, not exceeding six inches in depth are placed not more than thirty inches on centres, no templates shall be required. When no templates required

SECTION 121.

Framing and Connecting Structural Work.

Framed and
connected
together

1. All iron or steel trimmer beams, headers and tail beams shall be suitably framed and connected together.

Strapped,
bolted and
anchored

2. And the iron or steel girders, columns, beams, trusses and all other iron work of all floors and roofs shall be strapped, bolted, anchored and connected together, and to the walls.

Angle iron
knees

3. All beams framed into and supported by other beams or girders shall be connected thereto by angles or knees of a proper size and thickness, and have sufficient bolts or rivets in both legs of each connecting angle to transmit the entire weight or load coming on the beam to the supporting beam or girder.

Bolts, rivets
and angles

4. In no case shall the shearing value of the bolts or rivets or the bearing value of the connection angles provided for in Section 138 of this Bylaw be exceeded.

5. The bolting up of connections will only be allowed when in the opinion of the Inspector of Buildings riveting is impractical.

SECTION 122.

Riveting of Structural Steel and Wrought Iron Work.

Distance from
rivet holes

1. The distance from centre of a rivet hole to the edge of the material shall be not less than,—

$\frac{5}{8}$ of an inch for $\frac{1}{2}$ inch rivets

$\frac{7}{8}$ of an inch for $\frac{5}{8}$ inch rivets

$1\frac{1}{8}$ inches for $\frac{3}{4}$ inch rivets

$1\frac{1}{2}$ inches for 1 inch rivets

2. Wherever possible, however, the distance shall be equal to two diameters.

Rivets machine
driven. Pitch
of rivets

3. All rivets shall be properly heated, driven hot and be machine driven wherever practical. All burnt, cocked or loose rivets shall be cut out and replaced and the direction of the stress shall not exceed sixteen times the least thickness of the outside member. At right angles to the stress it shall not exceed thirty-two times the least thickness of the outside member.

4. All holes shall be punched accurately, so that upon assembling a cold rivet will enter the hole without straining the material by drifting. Occasional slight errors shall be corrected by reaming. Accurate holes

5. The rivets shall fill the holes completely; the heads shall be hemispherical and concentric with the axis of the rivet. Rivets to fill holes

6. Gussets shall be provided wherever required, of sufficient thickness and size to accommodate the number of rivets necessary to make a connection. Gussets

SECTION 123.

Bolting of Structural Steel and Wrought Iron Work.

1. Where riveting is impossible connections may be effected by bolts. These bolts shall be of wrought iron or mild steel and they shall have Manufacturers Standard threads. The threads shall be full and clean, the nut shall be truly concentric with the bolt, and the thread shall be of sufficient length to allow the nut to be screwed up tightly. Bolt connections

2. When bolts go through bevel flanges, bevel washers to match shall be used so that head and nut of bolt are parallel. Bolts and nuts
bevel washers

3. When bolts are used for suspenders, the working stresses shall be reduced for wrought iron to 10,000 pounds, for steel to 14,000 pounds per square inch of net area, and the load shall be transmitted into the head or nut by strong washers distributing the pressure evenly over the entire surface of the same. Suspender bolts

Washers

5. Turned bolts in reamed holes shall be deemed a substitute for field rivets, but the diametrical clearance shall not exceed one-sixty-fourth of an inch if turned bolts are used. Turned bolts

SECTION 124.

Steel and Wrought Iron Trusses.

1. The trusses shall be of such design that the stresses in each member can be calculated. Design

Lateral and
sway bracing

2. All trusses shall be held rigidly in position by efficient systems of lateral and sway bracing, struts being spaced so that the maximum limit of length to least radius of gyration, established in Section 111 of this Bylaw, is not exceeded.

Total stresses
not to exceed
safe working
stresses

3. Any member of a truss subjected to transverse stress in addition to direct tension or compression shall have the stresses causing such strain added to the direct stresses coming on the member, and the total stresses thus formed shall in no case exceed the working stress as stated in Section 138 of this Bylaw.

SECTION 125.

Riveted Steel and Wrought Iron Trusses.

In tension, ten
area only to be
calculated

4. For tension members, the actual net area only, after deducting rivet holes, one-eighth inch larger than the rivets, shall be considered as resisting the stress.

When one
flange only of
iron angle is
riveted

5. If tension members are made of angle iron riveted through one flange only, only that flange shall be considered in proportioning areas. Rivets to be proportioned as prescribed in Section 122 of this Bylaw.

Bending
strains

6. If the axes of two adjoining web members do not intersect within the line of the chords, sufficient areas shall be added to the chord to take up the bending strains, or the web members shall be connected by plates so arranged that the axis of the web members prolonged will intersect with the axis of the chord.

Connections

7. No bolts shall be used in the connections of riveted trusses, excepting when riveting is impracticable, and then the holes shall be drilled or reamed.

SECTION 126.

Steel and Iron Pin-Connected Trusses.

Allowable
bending
stresses

1. The bending stresses on pins shall be limited to 20,000 pounds for steel and 15,000 pounds for wrought iron.

2. All compression members in pin-connected trusses shall be proportioned, using seventy-five per cent of the permissible working stress for columns. The heads of all eye-bars shall be made by upsetting or forging. No weld will be allowed in the body of the bar. Steel eye-bars shall be annealed. Bars shall be straight before boring.

Eye-bars

3. All pin-holes shall be bored true, and at right angles to the axis of the members, and must fit the pin within one sixty-fourth of an inch. The distance of pin-holes from centre to centre for corresponding members shall be alike, so that, when piled upon one another, pins will pass through both ends without forcing.

Pin-holes

4. Eyes and screw ends shall be so proportioned that upon test to destruction, fracture will take place in the body of the members—

Eyes and screw ends

5. All pins shall be accurately turned.

6. Pin-plates shall be provided wherever necessary to reduce the stresses on pins to the working stresses prescribed in Section 138 of this By-law. These pin-plates shall be connected to the members without exceeding working stresses.

Pin plates

7. All rivets in members of pin-connected trusses shall be machine driven. All rivets in pin-plates which are necessary to transmit stress shall be also machine driven.

Rivets

8. The main connections of members shall be made by pins. Other connections may be made by bolts.

Connections

9. If there is a combination of riveted and pin-connected members in one truss, these members shall comply with the requirements for pin-connected trusses; but the riveting shall comply with the requirements of Section 122 of this Bylaw.

Combination of riveted pin-connected members

SECTION 127.

Iron and Other Metal Fronts to be Filled In.

1. All cast iron or metal plates of fronts shall be backed up or filled in with masonry of the thickness provided for in Sections 31 and 32.

Masonry filling

SECTION 128.

Painting of Metal Structural Work.

Surfaces in
contact to be
painted

1. Where surfaces in riveted work come in contact with each other, they shall be painted before assembling.

Metal to be
imbedded in
concrete

2. Paint shall not be allowed on metal structural work, which is to be thoroughly embedded in concrete or cement grout applied directly against the metal, except where surfaces in riveted work come in contact with each other.

Surfaces
cleaned and
painted

3. All metal structural work that is not to be thoroughly embedded in concrete or cement grout shall be cleaned of all scales, dust, and rust, and thoroughly coated with at least one coat of suitable paint; after erection of all such work shall be painted at least one additional coat.

Cast iron
columns
inspected
before
painting

4. Cast-iron columns shall not be painted or covered until after inspection by the Department of Buildings.

Metal under
water

5. All iron or steel used under water shall be enclosed with concrete.

PART XXII.

FLOOR LOADS—TEMPORARY SUPPORTS.

SECTION 129.

Floor Loads.

Dead loads
defined

1. The dead loads in all buildings shall consist of the actual weight of walls, floors, roofs, partitions, and all permanent construction.

Live loads
defined

2. The live or variable loads shall consist of all loads other than dead loads.

Strength of
floors

3. Every floor shall be of sufficient strength to bear safely the weight to be imposed thereon in addition to the weight of the materials of which the floor is composed.

4. If to be used as a dwelling house, apartment house, apartment hotel, hotel or lodging house, each floor shall be of sufficient strength in all its parts to bear safely upon every superficial foot of its surface not less than sixty pounds. In dwellings, apartments, tenements, hotels and lodging houses
5. If to be used for office purposes not less than seventy-five pounds upon every superficial foot above the first floor and for the latter floor one hundred pounds. For office buildings
6. If to be used as a school or place of instruction, not less than seventy-five pounds upon every superficial foot. For school buildings
7. If to be used for stable and carriage house purposes, not less than seventy-five pounds upon every superficial foot. For stables and carriage houses
8. If to be used as a place of public assembly, not less than ninety pounds upon every superficial foot. For public assembly buildings
9. If to be used for ordinary stores, light manufacturing and light storage, not less than one hundred and twenty pounds upon every superficial foot. For ordinary stores, light manufactory, light storage buildings
10. If to be used as a store where heavy materials are kept or stored, warehouse, factory or for any other manufacturing or commercial purpose, not less than one hundred and fifty pounds upon every superficial foot. For heavy stores, warehouses, factories
11. The strength of factory floors intended to carry running machinery shall be increased above the minimum given in this Section in proportion to the degree of vibratory impulse liable to be transmitted in the floor, as may be required by the Building Inspector. When running machinery is used
12. The roofs of all buildings having a pitch of less than thirty degrees shall be proportional to bear safely thirty pounds upon every superficial foot of their surface, in addition to the weight of materials composing the same. If the pitch be more than twenty degrees the live load shall be assumed at thirty pounds upon every superficial foot measured on a horizontal plane. Roof loads
13. For sidewalks between the curb and area lines the live load shall be taken at three hundred pounds upon every superficial foot. Sidewalks. live load for

Vertical Supports.

Bearing
strength for
vertical
supports

14. Every column, port or other vertical support shall be of sufficient strength to bear safely the weight of the portion of each and every floor depending upon it for support in addition to the weight required as before stated to be supported safely upon said portions of said floors.

Reduction in Live Loads on Columns.

Permissible
in certain
buildings over
five storeys in
height

15. For the purpose of determining the carrying capacity of columns in dwellings, office buildings, stores, stables and public buildings when over five storeys in height, a reduction of the live loads shall be permissible as follows:

Roof and top
floor full live
load

For the roof and top floor the full live loads shall be used.

Lower floor
reduced until
50 per cent of
live load is
reached

For each succeeding lower floor it shall be permissible to reduce the live load by five per cent. until fifty per cent. of the live loads fixed by this Section is reached, when such reduced loads shall be used for all remaining floors.

SECTION 130.

Load on Floors to be Distributed.

1. The weight placed on any of the floors of any building shall be safely distributed thereon.

Re-distribut-
ing loads

2. The Inspector of Buildings may require the owner or occupant of any building, or of any portion thereof, to redistribute the load on any floor, or to lighten such load where he deems it to be necessary.

SECTION 131.

Strength of Existing Floors to be Calculated.

In ware-houses
factories and
heavy stores

1. In all warehouses, storehouses, factories, workshops and stores where heavy materials are kept or stored, or machinery introduced, the weight that each floor will safely sustain upon each superficial foot thereof, or upon each varying part of such floor, shall be estimated by the owner or occupant, or by a competent person employed by the owner or occupant.

2. Such estimate shall be reduced to writing, on printed forms furnished by the Inspector of Buildings, stating the material, size, distance apart and spans of beams and girders, posts or columns to support floors, and its correctness shall be sworn to by the person making the same.

Estimated strength to be sworn to

3. And it shall thereupon be filed in the office of the Inspector of Buildings.

To be filed

4. But if the Inspector of Buildings shall have cause to doubt the correctness of said estimate, he is empowered to revise and correct same, and for the purpose of such revision the officers and employees of the Department of Buildings may enter any building and remove so much of any floor or other portion thereof as may be required to make necessary measurements and examinations.

Inspector of Buildings may correct any filed estimate of strength

5. When the correct estimate of the weight that the floors in any such buildings will safely sustain has been ascertained, as herein provided, the Inspector of Buildings shall approve the same.

Approval of correct estimates of strength

6. And thereupon the owner or occupant of said building, or of any portion thereof, shall post a copy of such approved estimate in a conspicuous place on each storey or varying parts of each storey, of the building to which it relates.

Floors and varying parts of floors

7. Before any building hereafter erected is occupied and used, in whole or in part, for any of the purposes aforesaid, and before any building, erected prior to the passage of this By-law, but not at such time occupied for the aforesaid purposes, is occupied or used in whole or in part for any of said purposes, the weight that each floor will safely sustain upon each superficial foot thereof, shall be ascertained and posted in a conspicuous place on each storey or varying parts of each storey to which it relates.

Strength of floors in new buildings to be posted before occupancy

8. No person shall place, or cause or permit to be placed on any floor of any building any greater load than the safe load thereof, as correctly estimated and ascertained as herein provided.

Forbidding excessive loads on floors

Expense for Examining into Strength of Floors.

9. Any expense necessarily incurred in removing any floor or other portion of any building for the purpose of making any examination herein provided for shall be paid by the City Treasurer of the City of Edmonton upon the requisition of the Inspector of Buildings to City Commissioners.

If found of
insufficient
strength

10. Such expenses shall be a charge against the person or persons or property by whom or on whose behalf said estimate was made, provided such examination proves the floor of insufficient strength to carry with safety the loads found upon them when such examination was made and shall be collected in an action to be brought by the City Solicitor against said person or persons, and the sum so collected shall be paid over to the said Treasurer to be deposited in said fund in reimbursement of the amount paid as aforesaid.

Floor Calculations Filed with Application to Build.

Examination
not required

11. When the owner or architect of record for any building has filed with application to build the data required to determine the strength of floors, on one of the blank forms provided for that purpose, such examination shall not be required provided that the purposes and uses of the building have not been changed.

SECTION 132.

Strength of Temporary Supports.

During the
erection or
alteration of
any building

1. Every temporary support placed under any structure wall, girder or beam, during the erection, finishing, alteration, or repairing of any building or structure or any part thereof, shall be of sufficient strength to safely carry the load to be placed thereon.

Forbidding
loads on any
floor excess
of safe live
load

2. During the construction or alteration of any building or structure no material entering into such construction or alteration shall be placed on any floor of any greater weight than the live load that each such floor is intended to safely sustain when the building or structure is completed.

PART XXIII.

CALCULATIONS, STRENGTH OF MATERIALS,

SECTION 135.

Safe Load for Masonry Work.

- | | |
|---|--|
| 1. The safe-bearing load to apply to brickwork shall be taken at— | Brickwork |
| 2. Eight tons per superficial foot when lime mortar is used; | Brick laid with lime mortar |
| 3. Ten tons per superficial foot when lime and cement mortar mixed is used; | Brick laid with lime and cement mortar |
| 4. Fifteen tons per superficial foot when cement mortar is used. | Brick laid with mortar |

Rubble-Stone Work.

5. The safe bearing load to apply to rubble stone work in continued walls only shall be taken at:
6. Eight tons per superficial foot in continuous walls when lime mortar is used;
7. Six tons per superficial foot in detached piers when lime mortar is used;
8. Ten tons per superficial foot in continuous walls when lime and cement mortar mixed is used;
9. Eight tons per superficial foot in detached piers when lime and cement mortar mixed is used;
10. Twelve tons per superficial foot in continuous walls when laid in Portland cement mortar;
11. Eight tons per superficial foot in detached piers when laid in Portland cement mortar.
12. The safe bearing load to apply to concrete when Portland cement is used shall be taken at five hundred pounds per square inch for plain concrete, and seven hundred per square inch for properly reinforced concrete.

13. Brickwork in continuous walls in lime mortar, lime 1, sand 4	111 lbs. per sq. in.
Brickwork in detached piers, walls in lime mortar, lime 1, sand 4	90 lbs. per sq. in.
Brickwork in continuous walls in lime mortar and Portland cement mortar, cement 1, lime 1, sand 3..	140 lbs. per sq. in.
Brickwork in detached piers, do	111 lbs. per sq. in.
Brickwork in continuous walls Portland cement mortar, cement 1, sand 3	136 lbs. per sq. in.
Brickwork in detached piers, do	140 lbs. per sq. in.
Rubble stonework in Portland cement mortar	140 lbs. per sq. in.
Rubble stonework in cement mortar	111 lbs. per sq. in.
Rubble stonework in lime and Portland cement mortar	97 lbs. per sq. in.
Rubble stonework in lime mortar	70 lbs. per sq. in.
Concrete in Portland cement, cement 1, sand $2\frac{1}{2}$, stone 4	450 lbs. per sq. in.
Concrete in Portland cement, cement 1, sand $2\frac{1}{2}$, stone 5	400 lbs. per sq. in.
Concrete in Portland cement, reinforced, do,	700 lbs. per sq. in.

Concrete.

The safe bearing load to apply to concrete:

1. When Portland cement is used shall be taken at fifteen tons per superficial foot;
2. And when cement other than Portland is used, eight tons per superficial foot.

SECTION 134.

Weight of Certain Materials.

1. In computing the weight of walls—

2. A cubic foot of brickwork shall be deemed to weigh one hundred and fifteen pounds.

3. Sandstone, white marble, granite and other kinds of building stone shall be deemed to weigh one hundred and seventy pounds per cubic foot.

SECTION 135.

Computations for Strength of Materials.

The dimensions of each piece or combination of materials required shall be ascertained by computation according to the rules prescribed by this By-law.

As ascertained
by rules of
Bylaws

SECTION 136.

Factors of Safety.

1. Where the unit stress for any material is not prescribed in this By-law the relation of allowable unit stress to ultimate strength shall be—

When not
described

2. As one to four for metals, subjected to tension or transverse stress;

Four metals

3. As one to six for timber;

For timber

4. And as one to ten for natural or artificial stones and brick or stone masonry.

For masonry
work

5. But wherever working stresses are prescribed in this Bylaw, varying the factors of safety herein above given, the said working stresses shall be used.

Working
stresses pre-
scribed by
Bylaw

SECTION 137.

Strength of Columns.

In columns or compression members with flat ends of cast iron, steel, wrought iron or wood, the stress per square inch shall not exceed that given in the following tables:

When the length divided by least radius of gyration equals:

	Cast Iron	Steel	Wrought Iron
120		8,240	4,400
110		8,820	5,200
100		9,400	6,000
90		9,980	6,800
80		10,560	7,600
70	9,200	11,104	8,400
60	9,500	11,720	9,200
50	9,800	12,300	10,000
40	10,100	12,880	10,800
30	10,400	13,460	11,600
20	10,700	14,040	12,400
10	11,000	14,620	13,200

And in like proportion for intermediate ratios.

When the length divided by the least diameter equals	Working stress per square inch of section		
	Long Leaf, Yellow Pine, Douglas Fir	White Pine, Norway Pine Spruce	Mountain Fir Tamarac Oak
30	460	350	390
25	550	425	475
20	640	500	560
15	730	575	645
12	784	620	696
10	820	650	730

And in like proportion for intermediate ratios. Five-eighths the value given for white pine shall also apply to hemlock posts.

Examples.

What will be the safe load for a Douglas fir post 10"x10"x10 feet in length?

Length in Inches.

120

———— = 12, for which the working stress per
10 square inch of section in the
least diameter. above table is 784.

The sectional area of a 10"x10" post is 100 square inches.

Sectional Area.

Working Stress.

Therefore 100x784: 78,400 lbs. or 39.2 tons, safe load.

What will be the safe load for Douglas fir post 8"x10"x10 feet in length?

Length in Inches.

120

$\frac{120}{8} = 15$, for which the working stress per square inch of section in the least diameter. above table is 730.

The sectional area of an 8"x10" post is 80 square ins.

Sectional Area.

Working Stress.

Therefore, 80x730= 58,400 lbs. or 29.2 tons safe load.

What will be the safe load for a round yellow-pine column 10 inches in diameter by 10 feet in length?

Length in Inches.

120

$\frac{120}{10} = 12$, for which the working stress per square inch of section in the least diameter. above table is 784.

The sectional area of a 10" round column is 78.54 square inches.

Sectional Area.

Working Stress.

Therefore, 78.54x784=61,575 lbs., or 30.79 tons, safe load.

Columns and compression members shall not be used having an unsupported length of greater ratios than given in the tables.

Columns Eccentrically Loaded.

Any column eccentrically loaded shall have the stresses caused by such eccentricity computed, and the combined stresses resulting from such eccentricity at

any part of the column, added to all other stresses at that part, shall in no case exceed the working stresses stated in this Bylaw.

The eccentric load of a column shall be considered to be distributed equally over the entire area of that column at the next point below at which the column is securely braced laterally in the direction of the eccentricity.

SECTION 138.

Working Stresses.

The safe carrying capacity of the various materials of construction (except in case of columns) shall be determined by the following working stresses in pounds per square inch of sectional area:

Compression (Direct).

Rolled Steel	16,000
Cast Steel	16,000
Wrought Iron	12,000
Cast Iron (in short blocks)	16,000
Steel Pins and Rivets (bearing)	20,000
Wrought Iron	15,000

	With Grain.	Across Grain.
Oak	900	800
Yellow Pine	1,000	600
Coast or Douglas Fir	1,000	600
White Pine or Mountain Fir	800	400
Spruce or Mountain Fir ...	800	400
Hemlock or Tamarac	500	500

Brickwork in Portland cement mortar; cement 1, sand 3	250
Brickwork in lime and cement mortar; cement 1, lime 1, sand 6	160
Brickwork in lime mortar; lime 1, sand 4	111
Rubble Stonework in Portland cement mortar	140
Rubble stonework in lime and cement mortar	97
Rubble stonework in lime mortar	70

Concrete (Portland) cement 1, sand 2, stone 4	500 to 600
Concrete (Portland) cement 1, sand 3, stone 6	400 to 500
Granites (according to test)	1,000 to 2,400
Gneiss stone	1,200
Limestone (according to test)	700 to 2,300
Marbles (according to test)	600 to 1,200
Sandstones (according to test)	400 to 1,600
Bluestone	2,000
Brick (hard-burned, flatwise)	300
Slate	1,000

Tension (Direct).

Rolled Steel	16,000
Cast Steel	16,000
Wrought Iron	12,000
Cast Iron	3,000
Yellow Pine or Coast or Douglass Fir.	1,200
White Pine or Mountain Fir	800
Spruce	600
Oak	1,000
Hemlock or Tamarac	800

Shear.

Steel Web Plates	9,000
Steel Shop Rivets and pins	10,000
Steel Field Rivets	8,000
Steel Field Bolts	7,000
Wrought Iron Web Plates	6,000
Wrought Iron Shop Rivets and Pins.	7,500
Wrought Iron Field Rivets	6,000
Wrought Iron Field Bolts	5,500
Cast Iron	3,000

	With Fibre.	Across Fibre.
Yellow Pine or Coast or Douglas Fir	70	500
White Pine or Mountain Fir	40	250
Spruce	40	275
Oak	100	600
Hemlock or Tamarac	40	275

Safe Extreme Fibre Stress (Bending).

Rolled Steel Beams	16,000
Rolled Steel Pins, Rivets and Bolts ..	20,000
Riveted Steel Beams (Net Flange Section)	14,000
Rolled Wrought Iron Beams	12,000
Rolled Wrought Iron Pins, Rivets and Bolts	15,000
Riveted Wrought Iron Beams (Net Flange Section)	12,000
Cast Iron Compression Side	16,000
Cast Iron Tension Side	3,000
Yellow Pine Coast or Douglas Fir ..	1,200
White Pine or Mountain Fir	800
Spruce or Tamarac	800
Oak	1,000
Hemlock	600
Chestnut	800
Granite	180
Gneiss Stone	150
Limestone	150
Slate	400
Marble	120
Sandstone	100
Bluestone	300
Concrete (Portland) Cement, 1; Sand, 2; Stone, 4	30
Concrete (Portland) Cement, 1; Sand, 2½; Stone, 5	20
Brick (hard-burned)	50
Brickwork (in cement)	30

SECTION 139.

Wind Pressure.

Exposed
surfaces

1. All structures exposed to wind shall be designed to resist a horizontal wind pressure of thirty pounds for every square foot of surface thus exposed, from the ground to the top of same, including roof, in any direction.

Stability

2. In no case shall the overturning moment due to wind pressure exceed seventy-five per centum of the moment of stability of the structure.

3. In all structures exposed to wind, if the resisting moments of the ordinary materials of construction, such as masonry, partitions, floors and connections, are not sufficient to resist the moment of distortion due to wind pressure, taken in any direction on any part of the structure, additional bracing shall be introduced sufficient to make up the difference in the moments.

Bracing
introduced
when
necessary

4. In calculations for wind bracing, the working stresses set forth in this Code may be increased by fifty per centum.

Working
stresses may
be increased

5. In buildings under one hundred feet in height provided the height does not exceed four times the average width of the base, the wind pressure may be disregarded.

When wind
pressure may
be disregarded

PART XXIV.

PUBLIC BUILDINGS, THEATRES AND PLACES OF ASSEMBLAGE.

SECTION 140.

In all public buildings or buildings of a public character—

Public
buildings

1. Such as hotels, churches, theatres, restaurants, railroad depots, public halls, and other buildings used or intended to be used for purposes of public assembly, amusement or instruction, and including department stores and other business and manufacturing buildings where large numbers of people are congregated, the halls, doors, stairways, seats, passageways and aisles, and all lighting and heating appliances and apparatus shall be arranged as the Inspector of Buildings shall direct to facilitate egress in cases of fire or accident, and to afford the requisite and proper accommodation for the public protection in such cases.

Specifically
named build-
ings

Including
business and
manufacturing
buildings

Egress from
and l in
and h
appliances in

2. All aisles and passageways in said buildings shall be kept free from camp-stools, chairs, sofas, and other obstructions, and no person other than an employee or policeman or fireman shall be allowed to stand in or occupy any of said aisles or passage-ways, during any performance, service, exhibition, lecture, concert, ball or any public assemblage.

Passageways
to be kept free
from obstruc-
tion

Policemen,
firemen, etc.

Requirements
for public
security

3. The Inspector of Buildings may at any time serve a written or printed notice upon the owner, lessee or manager of any of the said buildings, directing any act or thing to be done or provided in or about the said buildings and the several appliances therewith connected, such as halls, doors, stairs, windows, seats, aisles, fire-walls, fire apparatus and fire escapes, as he may deem necessary.

Theatres Existing Prior to the Passage of this Ordinance.

Lighting
requirements

4. Nothing herein contained shall be construed to authorize or require any other alterations to theatres existing prior to the date of this By-law than as specified in this Section.

SECTION 141.

Theatres and Places of Public Amusement.

To be built in
accordance
with this
section

1. Every theatre or opera house, or other building intended to be used for theatrical or operatic purposes, or for public resort or entertainments of any kind, hereafter erected, for the accommodation of more than three hundred persons, shall be built to comply with the requirements of this Section.

When not in
conformity
with this
section, not to
be used

2. No building, which at the time of the passage of this By-law, is not in actual use, for theatrical or operatic purposes, and no building and no building hereafter erected not in conformity with the requirements of this Section, shall be used for theatrical or operatic purposes, or for public entertainments of any kind, until the same shall have been made to conform to the requirements of this Section.

Approval to be
obtained
before opening
to the public

3. No building hereinbefore described shall be opened to the public for theatrical or operatic purposes, or for public entertainments of any kind, until the Inspector of Buildings shall have approved the same in writing as conforming to the requirements of this Section, nor until the Chief of the Fire Department shall have certified in writing that all the appliances for the extinguishing of fire or guarding against the same conform to this By-law and to the special requirements of this Section, and are in a complete and satisfactory working conditions.

4. Every such building shall have at least one front on the street, and in such front there shall be a suitable means of entrance and exit for the audience. Street frontage

5. In addition to the aforesaid entrances and exits on the street, there shall be reserved for service in case of an emergency, an open court or space on the side not bordering on the street, where said building is located on a corner lot; and on both sides of said building, where there is but one frontage on the street. Open spaces

6. The width of such open court or courts shall be not less than seven feet where the seating capacity does not exceed one thousand people, exceeding one thousand and not more than eighteen hundred people, eight feet in width, and exceeding eighteen hundred people, ten feet in width. Said open court or courts shall begin on a line with or near the proscenium wall and shall extend the length of the auditorium proper, to or near the wall separating the same from the entrance lobby or vestibule. Width for open courts

7. A separate and distinct corridor shall continue to the street, from each open court, through such superstructure as may be built on the street side of the auditorium, with continuous walls of brick or fireproof materials on each side the entire length of said corridor or corridors, and the ceiling and floors shall be fireproof. Said corridor or corridors shall not be reduced in width to more than three feet less than the width of the open court or courts, and there shall be no projection in the same; the outer openings to be provided with doors or gates opening toward the street. Corridors to street

8. During the performance the doors or gates in the corridors shall be kept open by proper fastenings; at other times they may be closed or fastened by moveable bolts or latches. Doors and gates kept open during performances

9. The said open courts and corridors shall not be used for storage purposes, or for any purpose whatsoever except for exit and entrance from and to the auditorium and stage, and must be kept free and clear during the performances. Courts and corridors kept clear from obstruction

Level of
corridors
above side-
walk

10. The level of said corridors shall be graded to the sidewalk and made flush therewith at all points at the street entrances.

Level for main
entrance

11. The entrance of the main front of the building shall not be on a higher level from the sidewalk than four steps, but this shall not preclude the use of an additional number of steps at the street entrances to the sides or rear of the building, as may be necessary to overcome the difference in grades of sidewalks.

Gradients

12. To overcome any difference of level in and between courts, corridors, lobbies, passages and aisles on the ground floor, gradients shall be employed of not over one foot in twelve feet with no perpendicular rises.

Exits from
auditorium
into side
courts

13. From the auditorium opening into the said open courts, or on the side street, there shall be not less than two exits on each side in each tier from and including the parquet and each and every gallery.

Width of exits
and doors

14. Each exit shall be at least five feet in width in the clear and provided with fire-doors constructed as hereinbefore in this By-law described for fireproof doors. All of said doors shall open outwardly, and shall be fastened with moveable bolts, the bolts to be kept drawn during performances.

Fire escape
balconies and
staircases

15. There shall be balconies not less than four feet in width in the said open court or courts at each level or tier above the parquet, on each side of the auditorium, of sufficient length to embrace the two exits, and from said balconies there shall be staircases extending to the ground level, with a rise of not over eight and one half inches to a step, and not less than nine inches tread exclusive of the nosing. The staircase from the upper balcony to the next below shall be not less than thirty inches in width in the clear and from the first balcony to the ground three feet in width in the clear, where the seating capacity of the auditorium is for one thousand people or less; three feet and six inches in the clear where exceeding one thousand people, and not more than eighteen hundred people; four feet in the clear where exceeding eighteen hundred people and not more than twenty-five hundred people; and four feet six inches in the clear where the seating capacity is more

Width of
staircases in
open courts

than twenty-five hundred people. All the before mentioned staircases and balconies shall be constructed of wrought iron or steel throughout, except the treads may be cast iron, and be of ample strength to sustain the load to be carried by them, and they shall be covered with a metal hood or awning, to be constructed in such manner as shall be approved by the Inspector of Buildings.

Metal awnings
over outside
staircases and
balconies

16. Where one side of the building borders on a street, there shall be balconies and staircases of like capacity and kind, as before-mentioned, carried to the ground.

Balconies and
staircases in
side street

17. When located on a corner lot that portion of the premises bordering on the side street and not required for the uses of the theatre may, if such portion be of fireproof construction, and not more than twenty-five feet average width, be used for offices, stores, or apartments, provided the walls separating this portion from the theatre proper are carried up solidly to and through the roof, and that an exit is provided for the theatre, on each tier, equal to the combined width of exits opening on opposite sides of each tier, communicating with balconies and staircases leading to the street in the manner provided elsewhere in this Section.

Corner build-
ings, a portion
may be used
for business

18. Nothing herein contained shall prevent a roof garden, art gallery, or rooms for similar purposes being placed above a theatre or public building, provided the floor of the same, forming the roof over such theatre or building shall be constructed of iron or steel and fireproof materials, and that said floor shall have no covering boards or sleepers of wood, but be of tile or cement. Every roof over said garden or rooms shall have all supports and rafters of iron or steel, and be covered with glass or fireproof materials, or both, but no such roof garden, art gallery or room for any public purpose shall be placed over or above that portion of any theatre or other building which is used as a stage.

purposes
Permitting
roof to be
used for a
garden, etc.

Roof over
garden

19. No workshop, storage or general property room shall be allowed above the auditorium or stage, or under the same, or in any of the fly galleries, unless all of such rooms or shops are located in the rear of or at the side of the stage, and in such cases they shall be separated

Workshops,
storage and
property
rooms,
location for

from the stage by a brick wall not less than twelve inches in thickness, and the openings leading to said portions shall have self-closing standard fire-doors.

Use of theatre
building for
other purposes
prohibited

20. No portion of any building hereafter erected or altered, used, or intended to be used for theatrical or other purposes as in this Section specified, shall be occupied or used as a hotel, boarding or lodging house, factory, workshop, or manufactory, or for storage purposes, except as may hereafter be specially provided for. Said restriction relates not only to that portion of the building which contains the auditorium and the stage, but applies also to the entire structure in conjunction therewith.

Specially
hazardous
business
prohibited

21. No store or room contained in the building, or the offices, stores or apartments adjoining, as aforesaid, shall be let or used for carrying on any business dealing in any article or material dangerous to life, except under such conditions as may be prescribed by the Fire Department, under authority, of a written permit issued by said Department, or for manufacturing purposes.

Lodging
quarters
prohibited

22. No lodging accommodation shall be allowed in any part of the building communicating with the auditorium.

Interior walls

23. Interior walls built of fireproof materials shall separate the auditorium from the entrance vestibule, and from any room or rooms over the same, also from any lobbies, corridors, refreshment or other rooms; and in all such walls the window and door frames and all sash and doors shall be fireproof; the window frames and sash shall be of metal of standard construction and the sash stationary and glazed with wired glass not less than one quarter inch in thickness, and each pane or unit measuring not more than twenty-four by thirty inches; the doors shall be made to close automatically and be of standard pattern and make in every respect.

Enclosure of
staircases

24. All staircases for the use of the audience shall be enclosed with walls of brick, or of fireproof materials approved by the Inspector of Buildings, in the storeys through which they pass, and the openings to said staircases from each tier shall be the full width of staircases. No door shall open immediately upon a flight of

stairs, but a landing at least the width of the door shall be provided between such stairs and such door.

25. A fire-wall, built of brick, not less than twelve inches in any portion of same shall separate the auditorium from the stage, and the same shall extend at least four feet above the stage roof, or the auditorium roof, if the latter be the higher, and shall be coped.

Proscenium wall

26. Above the proscenium opening there shall be a steel girder of sufficient strength to safely support the load above, and the same shall be covered with fireproof material not less than four inches in thickness.

Steel girder above proscenium opening

27. Should there be constructed an orchestra over the stage, above the proscenium opening, the said orchestra, shall be placed on the auditorium side of the proscenium fire-wall, and shall be entered only from the auditorium side of said wall.

Orchestra when placed above the stage

28. The molded frame around the proscenium opening shall be formed entirely of fireproof materials; if metal is used, the metal shall be filled in solid with non-combustible material and securely anchored to the wall with iron.

Proscenium frame

29. The proscenium opening shall be provided with a fireproof metal curtain, or a curtain of asbestos or other fireproof material approved by the Inspector of Buildings, overlapping the brick proscenium wall at each side not less than twelve inches, and sliding vertically at each side within iron grooves or channels to a depth of not less than twelve inches, said grooves or channels to be securely bolted to the brick wall and extend to a height of not less than three feet above the top of the curtain when raised to its full limit.

Curtain for proscenium opening

30. Said curtain to be suspended or hung by steel cables passing over wrought iron steel sheaves supported by wrought iron brackets of sufficient strength and well braced; the brackets to be securely attached to the proscenium wall by through bolts with nuts and washers on the opposite side of the wall. Said fireproof curtain shall be raised at the commencement of each performance, lowered between each act, and lowered at the close of said performance, and be operated by approved machinery for that purpose.

Raising and lowering of curtain
Weight for curtain

**Weight for
curtain**

If the proscenium curtain be of asbestos, that material shall be reinforced with wire, or wire spun in the asbestos, and at the bottom of the curtain shall be placed a rigid metallic rod or bar of proper weight, securely fastened to the curtain and covered over with like material to the curtain itself to carry down the curtain by the weight of the said rod or bar when released. The excess weight of the curtain is to be overcome by a check-rope of cotton or hemp, extending to the floor on both sides of the stage, so that the cutting or burning of which will release the curtain and the same will then descend at its normal rate of speed. The proscenium curtain shall be placed at the nearest point at least three feet distant from the footlights.

**Doorways in
proscenium
wall**

31. No doorway or opening through the proscenium wall from the auditorium, shall be allowed above the level of the first floor, and such first floor openings shall have self-closing standard fire-doors at each side of the wall, and openings, if any, below the stage hall each have a self-closing standard fire-door, and all of the said doors shall be hung so as to be opened from either side of the wall at all times.

**Ventilators
over stage**

32. There shall be one or more ventilators constructed of metal or other incombustible material near the centre above the highest part of the stage in every theatre, extending at least ten feet above the stage roof, and of a combined area equal to at least twelve per centum of the area within the stage walls. The openings in every such ventilator shall be closed by valves, louvres, or dampers, so counterbalanced as to open automatically, held closed by hempen or cotton cord, in which shall be inserted a fusible link at such a point as to be near the bottom of the ventilator. Such cord shall be fastened at the stage floor level near the prompter's desk, and so arranged that it can be easily reached and severed in case of necessity.

Stage floor

33. All that portion of the stage not comprised in the working of scenery, traps and other mechanical apparatus, for the presentation of a scene, usually equal to the width of the proscenium opening, shall be built of iron or steel beams filled in between with fireproof material, and all girders for the support of said beams shall be of wrought iron or rolled steel.

34. The fly-galleries and tie-galleries entire, including pin-rails, shall be constructed of iron or steel and the floor of said gallery shall be composed of iron or steel beams filled in with fireproof materials and no wood boards or sleepers shall be used as a covering over beams, but the said floors shall be entirely fireproof. Tie galleries and fly-galleries, construction of
35. The gridiron or rigging loft shall have a lattice iron floor, and be readily accessible by iron stairways. Gridiron floor
36. All stage scenery, curtains and decorations made of combustible material, and all woodwork on or about the stage, shall be painted or saturated with some non-combustible material, or otherwise rendered safe against fire. Stage scenery
37. And the finishing coats of paint applied to all woodwork throughout the entire building shall be of such kind as will resist fire to the satisfaction of the Inspector of Buildings. Finishing coats of paint fire-resisting kind
38. The roof over the auditorium and the entire main floor of the auditorium and vestibule, also the entire superstructure over the entrance, lobby and corridors, and all galleries and supports for the same in the auditorium, shall be constructed of iron or steel and fireproof materials, not excluding the use of wood floor boards and necessary sleepers to fasten the same to, but such sleepers shall not mean timbers of support, and the space between the sleepers, excepting the portion under the stepping in the galleries, which shall be properly fire-stopped, shall be solidly filled with incombustible material up to the under side of the floor boards. Roofs, floors and galleries fireproof
39. The fronts of each gallery shall be entirely formed of fireproof materials, except the capping, which may be made of wood. Gallery fronts
40. The ceiling under each gallery shall be entirely formed of fireproof materials. Ceilings under galleries
41. The ceiling of the auditorium shall be formed of fireproof materials. Ceiling of auditorium
42. All lathing, whenever used, shall be of wire or other metal on metal studding. Metal lathing

Partitions and
furrings to be
fireproof

43. The partitions in that portion of the building which contains the auditorium, the entrance and vestibule and every room and passage devoted to the use of the audience, shall be constructed of fireproof materials, including the furring of outside or other walls.

Wood sheath-
ing, canvas,
etc., prohibited

44. None of the walls or ceilings shall be covered with wood sheathing, wood wainscoting, canvas, or any combustible material.

Orchestra
sounding
board

45. But this shall not preclude the construction of a wood sounding board over orchestra pit when the same extends back of and below the overhang of the stage, provided the said wood sheathing be properly fire-stopped by a twelve-inch brick wall back of same, and also have a proper fireproof construction directly under the overhang of the stage extending from the brick wall to the apron of the stage.

Actors'
dressing-rooms

46. Actors' dressing rooms shall not be placed on the stage, over the stage, on the fly-galleries, nor under the auditorium, but shall be placed in a separate section provided for that purpose.

Dressing-room
partitions

47. The walls separating said section containing the actors' dressing rooms from the stage shall be not less than twelve inches in thickness, and the openings therefrom to stage shall be protected with standard self-closing fire-doors. The partitions dividing the dressing-rooms, together with the partitions of every passage-way from the same to the stage, and all other partitions on or about the sides of the stage, or fireproof portion thereof, shall be constructed of fireproof material not less than four inches in thickness approved by the Inspector of Buildings.

Fireproof
doors

48. All doors in any of said partitions shall be standard fire-doors.

Exits for
dressing rooms

49. All dressing rooms shall have an independent exit leading directly into a court or street, and shall be ventilated by windows in the external wall.

Cupboards
and shelving

50. All shelving and cupboards in each and every dressing-room, property room, or other storage rooms shall be constructed of metal, slate or some fireproof material.

51. All windows where accessible, except as in this Section otherwise specified, shall be arranged to open. Windows to open

52. None of the windows in outside walls shall have fixed sashes, fixed iron grills or bars; these may be arranged to hinge and lock, but must be left unlocked during performances. Fixed sash and grills prohibited

53. All seats in the auditorium excepting those contained in boxes, shall be not less than thirty-two inches from back to back, measured in a horizontal direction and firmly secured to the floor. No seat in the auditorium shall have more than six seats intervening between it and an aisle, on either side. Seats in auditorium

54. No stool or seat shall be placed in any aisle. Stools or seats in aisles

55. All platforms in galleries formed to receive the seats shall be not more than twenty-four inches in height of riser, nor less than thirty-two inches in width of platform. Platforms in galleries

56. All aisles on the respective floors in the auditorium, having seats on both sides of same, shall be not less than three feet wide where they begin, and shall be increased in width towards the exits in the ratio of one and one-half inches of five running feet. Aisles having seats on one side only, shall be not less than two feet six inches wide at their beginning, and increased in width the same as aisles having seats on both sides. Aisles in auditoriums

57. The aggregate capacity of the foyers, lobbies, corridors, passages and rooms for the use of the audience not including aisle space between seats shall on each floor or gallery, be sufficient to contain the entire number to be accommodated on said floor or gallery, in the ratio of one hundred and fifty superficial feet of floor room for every one hundred persons. Capacity of lobbies, etc., for use of audience

58. Gradients or inclined planes shall be employed instead of steps where possible to overcome slight differences of level in or between aisles, corridors and passages. Gradients in aisles

59. Every theatre accommodating three hundred persons shall have at least two exits; when accommodat- Exits, number of proportioned to size of house

ing five hundred persons, at least three exits shall be provided; these exits not referring to or including the exits to the open court at the side of the theatre.

Exit doors,
width for

60. Doorways of exit or entrance for the use of the public shall be not less than five feet in width, not including the fire exit doorways, and for every additional five hundred persons or fraction thereof in excess of five hundred, to be accommodated, an aggregate of twenty inches additional exit width must be provided.

Exit doors to
open out-
wardly

61. All doors of exit or entrance shall open outwardly and be hung to swing in such a manner as not to become an obstruction in a passage or corridor, and no such doors shall be closed and locked when the building is open to the public.

Gallery exits
and entrances

62. Distinct and separate places of exit and entrance shall be provided for each gallery above the first gallery.

Main floor
and first
gallery may
exits and
entrances in
common

63. A common place of exit and entrance may serve for the main floor of the auditorium and the first gallery, provided its capacity be equal to the aggregate capacity of the outlets from the main floor and the said gallery.

Least width for
passage to
stairway

64. No passage leading to any stairway communicating with any entrance or exit, not including fire exits, shall be less than four feet in width in any part thereof.

Stairways to be
fireproof

65. All stairs within the building shall be constructed of fireproof material throughout, as is elsewhere in this By-law required.

Stairs from
balconies and
galleries

66. Stairs from balconies and galleries shall not communicate with the basement or cellar.

Treads and
risers of stairs
to be uniform

67. All stairs shall have treads of uniform width and risers of uniform height throughout in each flight.

Stairways,
number and
width of

68. No stairways from galleries shall be less than four feet in width. Where accommodation is provided in a gallery for more than one hundred people, there shall be at least two stairs extending to the ground ar-

ranged on opposite sides of gallery, and for every additional fifty people or fraction thereof in excess of the first one hundred to be accommodated, six inches shall be added to the width proportionately divided between the two flights.

69. The width of all stairs shall be measured in the clear between handrails.

Measurement
for width of
stairs

70. In no case shall the risers of any stairs exceed seven and a half inches in height, nor shall the treads, exclusive of nosings, be less than ten and one-half inches wide in straight stairs.

Height for
risers and
width of tread
of stairs

71. No circular or winding stairs for the use of the public shall be permitted.

Circular or
winding stairs
prohibited

72. Where the seating capacity is for more than one thousand people, there shall be at least two independent staircases, with direct exterior outlets provided for each gallery in the auditorium; where there are not more than two galleries, the stairs shall be located on opposite sides of said galleries. Where there are more than two galleries one or more additional staircases shall be provided, the outlets from which shall communicate directly with the principal exit or other exterior outlets.

Gallery stair-
cases and
outlets

73. All said staircases shall be of width proportioned to the gallery accommodation as elsewhere herein prescribed. Where the seating capacity is for one thousand people or less, two direct lines of staircases only shall be required, located on opposite sides of the galleries, and in both cases shall extend from the sidewalk level to the upper gallery, with outlets from each gallery to each of said staircases.

Width of stair-
cases propor-
tioned to
gallery accom-
modation

74. At least two independent direct exterior outlets shall be provided for the service of the stage, and shall be located on the opposite sides of the same.

Exterior out-
lets for stage

75. All inside stairways leading to the upper galleries of the auditorium shall be enclosed on both sides with walls of fireproof materials. Stairs leading to the first or lower gallery may be left open on one side, in which case they shall be constructed as herein provided for

Enclosing of
stairways

similar stairs leading from the entrance hall to the main floor of the auditorium. But in no case shall stairs leading to any gallery be left open on both sides.

When Straight Stairs Return Directly on Themselves.

Stairs, land-
ings of

76. When straight stairs return directly on themselves, a landing of the full width of both flights, without any steps, shall be provided. The outer line of landings shall be curved to a radius of not less than two feet, to avoid square angles. Stairs turning at an angle shall have a proper landing without windows introduced at said turn. In stairs, when two side flights connect with one main flight, no winders shall be introduced, and the width of the main flight shall be at least equal to the aggregate width of the side flights. All stairs shall have proper landings introduced at convenient distances.

Handrails for
enclosed stairs

77. All enclosed staircases shall have, on both sides, strong handrails firmly secured to the wall about three inches distant therefrom and about three feet above the stairs, but said handrails shall not run on level platforms and landings where the same are of greater length than the width of the stairs.

Centre hand-
rail for wide
stairs

78. All staircases eight feet and over in width shall be provided with a centre handrail of metal, not less than two inches in diameter, placed at a height of about three feet above the centre of the treads, and supported on wrought metal or brass standards of sufficient strength, placed not nearer than four feet nor more than six feet apart, and securely bolted to the treads or risers of stairs, or both, and at the head of each flight of stairs, on each landing, the post of standard shall be at least six feet in height, to which the rail shall be secured.

Steam boilers
location for

79. Every steam boiler which may be required for heating or other purposes shall be located as directed by Inspector of Buildings, and the space allotted to the same shall be enclosed by walls of masonry on all sides, and the ceiling of such space shall be constructed of fire-proof materials. All doorways in said walls connecting with the building shall have standard automatic sliding fire-doors.

80. No floor register for heating, ventilating or other purposes shall be permitted. Floor registers prohibited

81. No coil or radiator shall be placed in any aisles or passageway used as an exit, and thereby reduce the same to less than the width required by this Section; but all said coils and radiators shall be placed in recesses formed in the wall or partition to receive the same. Radiators in passageways forbidden

82. All supply, return or exhaust pipes shall be properly encased where passing through floors or near woodwork. Steam pipes near wood-work

83. Standpipes of not less than four inches in diameter, shall be provided with hose connections as follows: One on each side of the auditorium in each tier, one on each side of the stage in each tier, one within ten feet of the door of the property room, and within ten feet of the door of the carpenter's shop and scenery storage room. Standpipes

84. All of such standpipes and hose connections shall be kept clear of obstruction. Obstructions

85. Said standpipes shall receive their supply of water from a gravity tank located over stage roof, bottom of tank at least twelve feet above highest point of roof, and not less than five thousand gallons capacity, and in addition at least one of the following supplies: Water supplies and gravity tank

86. Approved steel pressure tank of not less than five thousand gallons total capacity, located on stage roof or not lower than gridiron floor; Pressure tank

87. Automatic fire pump of not less than five hundred gallons capacity per minute. Automatic pump

88. From city mains where nozzle pressure is not less than 25 pounds per square inch at the highest hose outlet when streams are in operation. City mains

89. Pipes shall be fitted with approved straightway composition gate valves at hose outlets, and the thread of all connections shall be uniform with that in use by the local Fire Department. Valves

- Spanners 90. Two spanners to be located at each hose connection.
- Immediate use 91. Pipes shall be kept constantly filled with water under pressure and be ready for immediate use at all times.
- Siamese connections 92. In addition to the requirements contained in this Section, the standpipes shall have a Siamese steamer connection and conform to all other requirements contained in Section 103 of this By-law covering standpipe installation.
- Hose 93. A sufficient quantity of approved linen hose not less than two and a half inches in diameter, in fifty foot lengths, but not less than fifty feet in total length, shall be kept attached to each hose connection. Hose shall be fitted with washers and equipped with couplings and nozzles, the thread of which shall be uniform with that in use by the Local Fire Department.
- Separate from sprinklers 94. The standpipe equipment above described to be installed independently of and without connection to the automatic sprinkler system required under this Section.
- Automatic sprinklers 95. A system of automatic sprinklers approved by the Inspector of Buildings and the Chief of the Fire Department shall be installed throughout the entire stage section of the theatre located in the rear of the proscenium wall; this to include under foot, under gridiron, under galleries, under the stage, in all dressing rooms, in all workshops, property and all other rooms and passageways.
- Location
- Water supply 96. There shall be an independent water supply to the sprinklers which may consist of a gravity tank of not less than ten thousand gallons capacity, and elevated not less than twenty-five feet above the highest sprinkler, and in addition at least one of the following supplies:
- (a) Automatic fire pumps of at least five hundred gallons capacity;
 - (b) Approved steel pressure tank of not less than seven thousand five hundred gallons capacity, located not lower than the highest line of sprinkler.

- (c) Direct supply from city water mains where the pressure is sufficient to maintain not less than twenty-five pounds at lightest line of sprinklers when same are in operation.

97. In addition to one or more of the above required supplies, there shall be a Siamese steamer connection placed on the outside of the building at each street front, installed as described in Section 103, and with suitable iron plate with raised letters securely attached to the wall near steamer connection, reading "Stage Sprinklers."

Siamese
connection

98. The location and spacing of sprinklers' heads and the schedule of pipe sizes shall conform to the standard recommended by the National Board of Fire Underwriters, which is hereby made a part of the requirements of this By-Law.

Pipe sizes

99. There shall be kept in readiness for immediate use, one forty gallon cask filled with water and six fire pails on each side of the stage, under the stage, on each fly gallery, and a supply of fire pails in property and other store rooms and in each workshop; said casks and buckets shall be painted red and letters "For Fire Purposes Only."

Casks and pail

100. There shall also be provided six three gallon approved chemical fire extinguishers, at least four axes, two twenty feet hooks, two fifteen feet hooks and two ten feet hooks on the stage, and such other appliances as may be required by the Chief of the Fire Department.

Extinguishers,
axes and hooks

101. Every portion of the building devoted to the uses or accommodation of the public, also all outlets leading to the streets, and including the open courts and corridors, shall be well and properly lighted during every performance and the same shall remain lighted until the entire audience has left the premises.

Lights for
rooms, passage
ways, corridors
and courts

102. There shall be one light within a red globe or lantern placed over each exit opening, on the auditorium side of the wall.

Exit lights

103. Gas mains and electric light wires supplying the building shall have three independent connections

Independent
connections

as follows: One for the stage, one for the auditorium, excepting the exit lights therein, and the third for the halls, corridors, lobbies, exit lights, including the exit lights in the auditorium and such other portions of the building used by the audience outside of the auditorium proper.

**Control of
lights**

104. All gas and electric lights in the halls, corridors, lobbies and other portions of the building used by the audience, with the exception of the auditorium proper, but including the exit lights therein, shall be controlled by two separate switches or valves, one to be located in the lobby and the other to be located so as to be operated from the outside of the building.

**Shutting off
gas**

105. Provision shall be made for shutting off all gas at a point outside of the building.

106. When interior gas lights are not lighted by electricity, other suitable appliances, to be approved by the Inspector of Buildings, shall be provided.

**Suspended or
bracket lights**

107. All suspended or bracket lights surrounded by glass, in the auditorium, or in any part of the building devoted to the public, shall be provided with proper wire netting underneath.

**Lights when
recessed in
walls or
ceilings**

108. No gas or electric light shall be recessed in the walls, woodwork ceilings, or in any part of the building unless protected by fireproof material.

**Lights to be
protected with
wire**

109. All lights in passages and corridors in said buildings, and wherever else deemed necessary by the Inspector of Buildings, shall be guarded with proper net wire.

Footlights

110. The footlights, when not electric, in addition to the wire net work, shall be guarded with strong wire guard and chain drawn taut placed not less than two feet distant from said footlights and the trough containing said footlights shall be formed of and surrounded by fireproof materials.

Border lights

111. All border lights shall be constructed according to the best-known methods and subject to the approval

of the Inspector of Buildings, and shall be suspended for not less than ten feet therefrom by wire rope or iron chain.

112. All ducts or shafts used for conducted heated air from the main chandelier, or from other light or lights, shall be constructed of metal and made double, with an air space between, or some other approved fire-proof material may be used.

Shaft over
main
chandelier

113. All stage lights shall have strong metal wire guards or screens, not less than eight inches in diameter, so constructed that any material in contact therewith shall be out of reach of the flames of said stage lights and such guards or fixtures shall in all cases be soldered to the fixture.

Stage lights

114. The bridge calcium lights at sides of proscenium shall be enclosed in front and on the side by galvanized iron so that no drop can come in contact with the lights. Electric calciums so-called, are included in the above requirements.

Bridge calcium
lights

115. The standpipes, gaspipes, electric wire, hose foot lights and all apparatus for the extinguishing of fire or guarding against same, as in this Section specified, shall be installed to the satisfaction of and be in charge of and under control of the Chief of the Fire Department, and the said Chief is hereby directed to see that the arrangements in respect thereto are carried out, enforced and maintained.

Fire Dept. to
have control
over gas,
electric light-
ing and fire
extinguishing
apparatus

116. A diagram or plan of each tier, gallery or floor showing distinctly the exits therefrom, each occupying a space not less than fifteen square inches, shall be printed in black lines in a legible manner on the programme of the performance.

Diagram of
theatre

117. Every exit shall have over the same on the inside, the word "Exit" painted in legible letters not less than eight inches high.

Signs over
places of exit

SECTION 142.

RULES AND REGULATIONS GOVERNING THE
THE STORAGE AND HANDLING OF NITRO-
CELLULOSE FILMS IN CONNECTION WITH
MOTION PICTURE FILM EXCHANGES.

1. (a) Each reel of film to be kept in a separate metal box with tight fitting cover, except when being examined or repaired.

Note.—A reel ordinarily contains 1,000 feet of film 1 11-32 inches wide, and weighs about 5 lbs. diameter of reel is about 10 inches.

(b) Films should be stored in a separate building, or vault, not exposing other property, if permitted in a building with other occupancy, to be in standard fire-proof vaults or safes.

Vaults

In buildings of non-fireproof construction to have self-supporting brick walls, not less than twelve inches thick, laid in cement and extending from the ground. Top and bottom of vault to be waterproof and made of brick or concrete arches of the same thickness as walls (arches may be sprung between steel beams if the latter have standard protecting coverings), no wood top flooring to be used. Size of vault not to exceed 750 cu. feet. Opening into vault to be protected on outer side of wall with standard vault iron doors, at least 3-16 inches thick, and made smoke-proof by closing against a groove; door and wall frames to be of equivalent construction to the standard iron fire door, vault pattern; and on the inner side of the wall by an iron door of at least No. 14 U. S. Gauge. Fixtures inside vaults to be of incombustible material. No light other than stationary vapor-proof incandescent electric lamps, properly guarded, to be installed inside. Switch to be outside and provided with pivot light or other indicator. No heat to be permitted in vault.

In fireproof buildings having standard protection on the steel framework, vaults may be carried on the structure from floor to floor. Walls to be of brick not less than 8 inches thick, or of hollow tile not less than 12 inches thick, laid in cement. Size of vault not to exceed 750 cub. feet. Top and bottom of vault to be wat-

erproof and made of brick, tile or concrete at least 8 inches thick. In all other respects to comply with specifications for vaults in buildings of non-fireproof construction.

Size not to exceed 150 cu. feet. To have an angle iron frame, continuous at all edges; angle iron to be at least $\frac{1}{4} \times 2$ inches, and for large sizes increased proportionately. On safes larger than 40 inches high, 30 inches wide, and 30 inches deep, an additional stiffening of heavy steel at least $\frac{1}{4}$ inch thick, and of width proportioned to size, but never less than 2 inches, to be used at top, bottom and sides. Sheet steel plates to be not less than No. 12 U. S. Gauge for the outer shell and not less than No. 14 for the inner shell. Filling to be of cement concrete not less than $5\frac{1}{2}$ inches thick, except that the doors may have 4 inches of concrete and a 2-inch sealed air space; this space may be used for the lock and bolts. Door to have stopped sides so as to be smoke-proof. No cast iron to be used in the construction of the safe, except such parts as casters, hinges, and flanged floor frames. Safes

Vaults and safes to be ventilated to the outside air by an opening having a sectional area of at least 50 square inches (if size of vault or safe is less than 150 cub. feet, the vent may have a sectional area of 12 sq. inches.) Vent pipes to be of metal not less than No. 18 U.S. Gauge in thickness and not to expose other property; to be shielded from the weather and provided with a wire screen of not larger than $\frac{1}{4}$ inch mesh. Ventilation of vaults and safes

2. (a) To be done only in a room having outside ventilation and separated from the balance of the building by tight partitions of incombustible material, with doors at openings, partitions and doors to contain no glass other than wired glass. Examining and repairing

(b) Room to be used neither for storage nor handling of combustible materials, other than the films.

(c) The number of reels of films in a room under examination and repair at any one time to be limited to ten (10).

(d) Reels containing films under examination, or in the process of re-winding, to be enclosed in magazines similar to those required on motion picture machines.

- Waste cans** 3. Standard metal cans to be provided where repairing is done. All scrap or waste from the films to be kept therein and removed from the building daily to a safe location. Such waste to be kept separate from paper waste or other rubbish.
- Cement** 4. Any compound of collodion and any lacetate or similarly inflammable cements to be limited to one quart, preferably not exceeding the quantity required each day.
- Lighting** 5. To be restricted to incandescent lamps in vapor-proof globes. Installation to be in accordance with requirements of the National Electric By-law.
- Heating** 6. Examination and repair room to be heated only by hot air, hot water, or steam, and a metal shield or screen or shield provided to prevent the films from coming in contact with radiators or heating pipes. No hot air floor registers to be used.
- Smoking** 7. To be prohibited in any room containing films, and signs posted to that effect.
- Motion picture machine and booths** 8. See National Electric By-law. Paragraph 65-A.
- Protection** 9. Each room to be equipped with at least two approved three-gallon hand fire extinguishers, at least one pail of sand to be provided for each vault in use.

Moving Picture Machines.

The following form shall in all cases be used and its provisions and obligations complied with:

Standard.—Machine to be operated in an enclosed metal lined (floor, walls and ceiling) cabinet sufficiently large to enable the operator to move around the machine, doorway to be protected by metal lined door opening outwards, closing automatically by a spring and kept closed. Cabinet to be thoroughly ventilated from above by opening protected by shutter provided with fusible link so as to close automatically, and the opening through which the picture is projected, as well as any other opening in the cabinet to be protected in a similar manner.

Machines to have a shutter which will automatically cut off the electric light from the film simultaneously with the cessation of movement of the film; the top reel of the film to be encased in a steel box with holes at the bottom only large enough for the film to pass through, and another steel box to be used for receiving the film after being used, with a hole in the top only large enough for the film to pass through freely; no solder to be used in the construction of either box; loose films or films not in use to be kept in metal box with tight-fitting cover. Machines to be operated by hand (motor-driven will not be permitted).

Smoking inside the cabinet strictly prohibited, and a chemical fire extinguisher should be hung on the outside of the cabinet.

The electric wiring in connection with these machines to be of extra size (not less than 6 B. & S. Gauge) and entirely separate from any other service in the building. Rheostat to be so arranged that even if it became red hot it could not communicate fire to surrounding material. To be outside the cabinet, well clear of the floor and sufficiently far from the ceiling so as not to be possible to communicate fire thereto. Woodwork or lath and plaster at the back of the rheostat to be protected by $\frac{1}{4}$ inch asbestos board covered with tin, and rheostat to be at least $1\frac{1}{2}$ inches clear of this protection. Rheostat to be properly enclosed in well ventilated metal covered and protected by heavy wire netting guard, which must be at least one inch from outside frame of rheostat.

1. Is picture machine contained in a cabinet?
2. Is the whole of inside cabinet (*i.e.*, floor, sides and ceiling, completely covered with metal?)
3. Has cabinet metal lined door?
4. Is the door arranged to be self-closing by means of a spring?
5. Is the door kept closed when the machine is in use?
6. How is the cabinet ventilated?
7. Is there any opening in the ceiling of the cabinet for ventilation?
8. If so, is this opening protected by a metal lined shutter provided with a fusible link so as to close automatically in case of fire?

9. Are all other openings in cabinet protected by metal lined shutters with fusible link?
10. Is wiring for machines separate from any other service in the building?
11. What gauge of wire is used?
12. Is rheostat outside of cabinet and mounted in such a way that it could become red hot and not communicate fire to nearby combustible material or wood-work?
13. Where is rheostat located, and how far is it from floor and from ceiling?
14. Is rheostat enclosed in metal and in addition protected by wire netting guard?
15. Is woodwork or plaster behind rheostat protected within covered asbestos board?
16. Is film contained in metal-riveted box and during operations simultaneously wound into another similar box, the opening in each being no larger than required for a film?
17. Is a chemical extinguisher provided for operating cabinet?
18. Is picture machine provided with automatic shutter which closes immediately the operation of the machine is stopped?
19. Is a motor used to operate the machine?
20. Is smoking absolutely prohibited in cabinet?
21. How is cabinet lighted?

Assured Signature

Address

Moving Picture Machines.

Building owned by

Situated side of street,

City or Town

Name of Plan Sheet Block.....
(Always give reference when on Plan.)

Description of Building.

Construction—State clearly if brick.....Frame.....

Metal Clad Brick veneered

Height (if brick, do walls rise above roof?)

If so, how high is parapet?

.....R.....L.....F.....B.

Thickness of walls.....R.....L.....Roof.....

Openings in walls1st.....2nd.....3rd.....

R.....L.....

How are these protected?

Additions.....Are there any frame, metal clad, veneered or rough cast?.....

Light Heating

Chimneys Power

If gasoline engine is used, describe installation?

Is tank in building? In base of engine, etc.

..... Manufactured by

Roof

Other Occupancies of Building.

Report all Tenants.—Give full particulars as to stocks, work done, process materials, machinery used and number of work hands employed.

Diagram.

Show all buildings in block in which risk is situated, giving construction, occupancies, exact distances between buildings, etc.

Date

.....
Agent's Signature.

SECTION 143.

Building Raised, Lowered, Altered or Moved.

1. Within the first fire limits it shall not be lawful for the owner or owners of any brick dwelling house

Raising roof
from a peak to
a flat roof

with eight inch walls or of any wood building already erected that has a peaked roof, to raise the same for the purpose of making a flat roof thereon, unless the same be raised with the same kind of material as the building, and unless such new roof be covered with fireproof material.

One-storey
buildings
prohibited on

2. No building hereafter erected on any portion of a lot fronting on Jasper Avenue, Namayo Avenue, First Street, MacDougall Avenue, Whyte Avenue, and Main Street, within first fire limits shall be less than two storeys in height.

All buildings

3. All buildings or structures hereafter erected or placed and situated within the first fire limits must have outer walls of brick, stone or concrete according to the tables of Section 32 of this By-law. And all roofs must be covered externally with slate, iron, copper or felt and gravel or other material having the approval of the Commissioners of the City of Edmonton.

Prohibiting
erection of
frame build-
ings.
Exceptions

4. No frame or wood structure shall be built hereafter within the fire limits as the said limits now are or from time to time hereafter be established, except as provided for in Section 145 of this By-law and also excepting grain elevators, coal elevators, and pockets, ice houses and exhibition buildings as provided for in Sections 82 and 83 of this By-law.

SECTION 144.

Existing Buildings.

Alterations to
frame build-
ings

Any alterations to a frame building in the first fire limits shall for the purpose of this By-law, be considered a re-erection thereof and subject to the provisions of this By-law; and any change (except ordinary repairs in, into or upon any such building) affecting an external party, bearing or partition wall, roof floor, chimney, stairway or any reconstruction or renewal of any existing part of any such building or of its fixtures or apparatus by which its fire risk, strength, or sanitation or the fire risk of any adjoining building is affected shall also for the purpose of this By-law, be considered a re-erection thereof and subject to the provisions of this By-law,

or, if the work proposed shall be for the purpose of enlarging the building in part or in whole shall be considered a re-erection thereof and subject to the provisions of this By-law.

SECTION 145.

Fire Limits.

The Fire Limits of the City of Edmonton shall be divided into districts to be known respectively as "First Class", "Second Class" and "Third Class".

1. The "First Class" fire limits of the City of Edmonton shall be all that district north of the Saskatchewan River within the following boundaries, commencing:

1st class
north of
Saskatchewan
River

At the intersection of the centre line of lane east of Kinistino Avenue with the centre line of Grierson Street; thence north along the centre line of said lane east of Kinistino Avenue to its intersection with the centre line of Bellamy Street; thence west along the centre line of Bellamy Street to its intersection with the centre line of lane east of Namayo Avenue; thence north along the centre line of said lane to its intersection with the centre line of Clark Street; thence west along the centre line of Clark Street, following the variations thereof, to its intersection with the centre line of First Street; thence south along the centre line of First Street to its intersection with the centre line of MacKenzie Avenue; thence west along the centre line of MacKenzie Avenue to its intersection with the centre line of the lane west of Fifth Street; thence south along the centre line of said lane to its intersection with the centre line of Athabasca Avenue; thence west along the centre line of Athabasca Avenue to its intersection with the centre line of Tenth Street; thence south along the centre line of Tenth Street to its intersection with the centre line of lane north of Jasper Avenue; thence west along the centre line of lane north of Jasper Avenue to its intersection with the centre line of Sixteenth Street; thence south along the centre line of Sixteenth Street to its intersection with the centre line of the lane south of Jasper Avenue; thence east along the centre line of lane south of Jasper Avenue to its intersection with the centre line of Tenth Street; thence south along the

centre line of Tenth Street to its intersection with the centre line of Vivtoria Avenue; thence east along the centre line of Victoria Avenue to its intersection with the centre line of Second Street; thence north along the centre line of Second Stree to its intersection with the centre line of College Avenue; thence east along the centre line of College Avenue to the brow of the high bank at its intersection with the east side of McDougall Avenue; thence easterly following the said bank till it meets the centre line extended southerly of Namayo Avenue; thence north along the southerly extension of the centre line of Namayo Avenue to its intersection with the centre line of Jasper Avenue; thence easterly along the centre line of Jasper Avenue to its intersection with the centre line of Grierson Street; thence easterly along the centre line of Grierson Street to the point of commencement. And in addition thereto Blocks "C", "D" and "E" lying on the west side of Nineteenth Street between the Canadian Northern Railway Company's right-of-way and Vermillion Avenue, as said Blocks are shown on the plan of sub-division of that part of the Hudson's Bay Company's Reserve.

2nd class
south of
Saskatchewan
River

2. All that part of the City, south of the Saskatchewan River within the following boundaries:

All of Blocks 60, 61, 62, 67, 68, 69, 79 and 50, and Lots 1 to 15, both inclusive, in Block 58, 1 to 15, both inclusive, in Block 59, 1 to 15, both inclusive, in Block 70, 1 to 15, both inclusive, in Block 71, 1 to 8, both inclusive, in Block 31, 1 to 8, both inclusive, in Block 32, 1 to 8, both inclusive, in Block 43, 1 to 8, both inclusive, in Block 44, 1 to 8, both inclusive, in Block 49, 1 to 18, both inclusive, in Block 63, 1 to 16, both inclusive, in Block 64, 19 to 36, both inclusive, in Block 131, 1 to 15, both inclusive, in Block 171, 19 to 36, both inclusive, in Block 142, 1 to 18, both inclusive, in Block 143, 1 to 15, both inclusive, in Block 170, 1 to 18, both inclusive, in Block 132, 1 to 16, both inclusive, in Block 165, 1 to 18, both inclusive, in Block 166 and 1 to 8, both inclusive in Block 80.

2nd class
north of
Saskatchewan
River

3. The "Second Class" Fire Limits of the City of Edmonton shall be all that district north of the Saskatchewan River within the following boundaries, commencing:

At the centre line of Cliff Street at its intersection with the centre line of Cliff Street South; thence easterly along the centre line of Cliff Street to its intersection with the centre line of River Street; thence north along the centre line of River Street to its intersection with the centre line of Roland Street; thence east along the centre line of Roland Street to its intersection with the centre line of the lane east of and parallel to Ottawa Avenue; thence north along the centre line of said lane east of and parallel to Ottawa Avenue to its intersection with the centre line extended easterly of Bellamy Street; thence east along the centre line of said easterly extension of Bellamy Street to its intersection with the centre line of Government Avenue; thence north along the centre line of Government Avenue to its intersection with the centre line of Norwood Boulevard; thence east along the centre line of Norwood Boulevard to its intersection with the centre line of Pine Avenue; thence west along the centre line of Pine Avenue to its intersection with the centre line of First Street; thence south along the centre line of First Street to its intersection with the centre line of Churchill Avenue; thence west along the centre line of Churchill Avenue to its intersection with the westerly line of Sixteenth Street; thence south along the westerly line of Sixteenth Street to its intersection with the south side of the Canadian Northern Railway Company's right-of-way; thence west along the southerly side of the said right-of-way to its intersection with the centre line of Twenty-first Street; thence westerly and southerly along the southerly and easterly side of the right-of-way of the Edmonton, Yukon and Pacific Railway to its intersection with Athabasca Avenue; thence east along the northerly side of said right-of-way to its intersection with the centre line produced of McDougall Street South to high water bank; thence in a straight line to the point of commencement.

4. All that part of the City south of the Saskatchewan River within the following boundaries:

All of Blocks 51, 52, 53, 76, 77, 78, 81, 82, 133, 136, 147, 148, all of Blocks 58, 59, 70, 71, 80, 65, 66, 132, 170, 143, 142, 171, 131, 64, 63, 49, 44, 31, 32 and 43 not included in the said first class fire limits, and also that portion of the said City South of the Saskatchewan River abutted and bounded as follows: Commencing at the intersection of the North boundary of First Avenue

2nd class
south of
Saskatchewan
River

North with the Easterly boundary of Lot 12, in Block 177; thence North in a straight line parallel to and 132 feet equally distant from the Easterly boundary of Fifth Street West to the intersection of such line with the south boundary of Sixth Avenue North produced easterly; thence west along such production and the north boundary of Sixth Avenue North to a point 132 feet equally distant from the intersection of the south boundary of Sixth Avenue North and the west boundary of Fifth Street West; thence south in a straight line parallel to and 132 feet equally distant from the west boundary of Fifth Street West to the intersection of such line with the north boundary of First Avenue North; thence east along the north boundary of First Avenue North to the point of commencement.

3rd class

5. The "Third Class" fire limits of the City of Edmonton shall be known as the districts not included in the First and Second Class fire limits and yet within the limits of the said City of Edmonton.

Damaged
frame
buildings
repair and
removal of

6. No wooden buildings within the said first class fire limits and which hereafter may be damaged to the extent of fifty per cent. or more of the value thereof shall be repaired or rebuilt without conforming to the provisions of this By-Law, and no such building where the damage is less than fifty per cent. of its value, shall be so repaired as to occupy a greater ground space than before the damage thereto, or to be raised an additional storey or part of a storey but nothing herein contained shall prevent anyone from putting a stone or other substantial foundation under any such building not to be more than four feet above the established grade of the street adjoining, nor shall it prevent anyone who may have a two-storey frame building with a one-storey frame kitchen, from erecting a second storey to said kitchen or prevent anyone from moving a frame building from the lot on which it stands, provided that it is not placed within the first class fire limits or within the second class fire limits without conforming with the provisions of this By-Law.

SECTION 146.

FRAME BUILDINGS

Applies to
temporary and
permanent
structures of
wood

Frame Structures Within the Second Fire Limits.

1. The provisions in this Section contained, shall

apply to buildings and structures, whether temporary or permanent, within the second fire limits, as the said second fire limits now are or from time to time may hereafter be established.

Temporary Frame Buildings.

2. Temporary one-storey frame buildings may be erected for the use of builders, within the limits of lots whereon buildings are in course of erection, or on adjoining vacant lots, upon permits issued by the Inspector of Buildings. For builders uses

3. Temporary structures shall be taken to mean and include platforms, stands, election booths and circus tents. Meaning or term

Sheds.

4. Sheds of wood not over fifteen feet high, open on at least one side, with the sides and roof thereof covered with fireproof material, may also be built, but a fence shall not be used as the back or side thereof. Limited height

5. Such sheds shall not cover an area exceeding 2,500 square feet, except by permission of the Inspector of Buildings, in isolated localities, and under such conditions as the City Commissioners may prescribe. Area allowed

Fences.

6. Fences of wood shall not be erected over ten feet high, above the surface of the ground, and shall be properly supported and braced. Barb wire will not be allowed along any street or lane. Height of fence

Signs.

7. Signs of wood shall not be erected over two feet high on any building, but no sign of wood shall be placed above the front wall or cornice or roof of any building. Height of signs

8. Sky signs, or any device in the nature of an advertisement, announcement or direction constructed of sheet metal or wire fastened to wood frame supported upon or above or attached to any building, shall be deemed to be wood signs. Sky signs

Limit of height
for sky signs

9. If such sky signs shall exceed two feet in height they shall be constructed entirely of metal, including the uprights, supports and braces for same, and shall be not more than nine feet in height above the front wall or cornice or roof of the building or structure to which they are attached or by which they are supported.

Permit
required to
erect

10. Before any wood or metal sign shall be placed in position upon, above or attached to the outside of any building, a permit shall first be obtained from the Inspector of Buildings.

Safely con-
structed and
placed

11. Such sign shall be so constructed, placed and supported as not to be or become dangerous.

Dangerous
signs

12. All signs which shall be dangerous in any manner whatever, shall be repaired and made safe or taken down by the owner, lessee or occupant of the building.

SECTION 147.

Frame Buildings Outside of First Fire Limits.

Where street
system is
established

1. The provisions of this section shall apply to frame or other buildings hereafter erected outside of the first fire limits as the same are now or may hereafter be established, in portions of the City of Edmonton where streets are now or may hereafter be legally established.

Height for Frame Buildings.

Limit of height

2. Three-storey frame buildings may be erected to a height not exceeding forty feet, said height being taken from the curb-line, where same exists, at the centre of front or side of building on which main entrance to upper floors is located.

Where walls do
not adjoin
street

3. Where the walls of a building do not adjoin the street or building line then the average level of the ground on which the buildings stands may be taken in place of the curb-line.

Measurement
for flat roof,
pitched roofs

4. The measurement for height shall be the highest point of roof-beams in case of flat-roof buildings, and to the average height of gable or roof in case of pitched roofs.

5. Towers, turrets, and minarets of wood may be erected to a height not to exceed ten feet greater than the foregoing limited height. Towers, turrets, &c.

6. Except that the spires of churches may be erected of wood to a height not exceeding seventy-five feet from the ground. Spires of churches

Area For Frame Buildings.

7. No frame building hereafter erected for any occupancy other than grain elevators, coal elevators and pockets, ice houses and exhibition buildings, and being not over forty feet in height, shall cover a ground area exceeding the following: Exceptions

8. One-storey building, seventy-five hundred square feet; two-storey building, five thousand square feet; and three-storey building, thirty-five hundred square feet. Maximum area

Footings for Frame Buildings.

9. All footings or bottom stones shall be at least six inches wider on each side than bottom width of foundation walls above except where the outside of the foundation walls sets on the property line, in which case six inches wider on the inside shall be sufficient. Width of footings

10. The thickness of footings shall be not less than eight inches if of stone, and not less than twelve inches if of concrete. Thickness of footings

Foundations for Frame Buildings.

11. Foundations for frame structures shall be built of concrete or terra cotta blocks or brickwork of a thickness not less than eight (8) inches at the top above grade and not less than twelve (12) inches below grade. Depth below ground

12. If the first storey walls are carried up in masonry they shall be not less than eight (8) inches thick for said first storey and be not less than twelve (12) inches thick from the footings to the top of the first tier of beams.

13. One-storey sheds and other light structures not intended for human habitation or to carry heavy loads may be built upon brick or concrete piers with proper footings as approved by the Inspector of Buildings.

14. All chimneys in frame buildings shall be built of brick or other approved fire-proof material and subject to the provisions of Part X, Section 64 of this By-Law.

15. Any frame buildings hereafter erected within three feet of an adjoining lot line or within three feet of any other frame structure shall have the space between the studs on any such side filled in solidly with no less than two and one-half ($2\frac{1}{2}$) inches of brick-work or other fire-proof material, except that the building may be extended fore and aft and comply with the above conditions with the exception that the connecting wall or partitions of said extension are not required to be filled.

16. Nothing in this section shall be construed to mean that a frame structure shall be built nearer than eighteen inches (18) to an adjoining lot line, except that it complies with the provisions of Part VI, Section 31 of this By-Law.

Walls of Frame Buildings.

When outside studs must be filled

17. In no case shall a frame building be erected within three feet of the side or rear line of a lot, unless the space between the studs on any such side be filled in solidly with not less than two and a half inches of brick-work or other fire proof material.

When party wall must be filled

18. When two or more such buildings are built continuous the party or division studding shall not be less than four inches thick and filled in solidly with brick-work or other fireproof material extending to the underside of roof boards.

When eight inch brick walls are used

19. When the division walls are of brick they shall be not less than eight inches thick above the foundation wall and extending to underside of roof boards, and the ends of the floor beams shall be so staggered or separated that not less than four inches of brickwork will be between the beams where they rest on said walls.

Frame Construction.

20. All frame or wood buildings exceeding a height of fifteen feet shall be built with sills, posts, girts, plates and rafters all of suitable size and properly framed and braced with suitable studs or planks, set at proper distance apart. Frame

21. The floor beams and rafters shall be not less than two inches in thickness. Minimum thickness for beams

22. The walls of light, vent and dumb waiter shafts, whether exterior or interior, in frame buildings may be constructed of frame. Shaft walls

23. The cellar stairs in frame buildings may be placed directly under main stairs, and no brick wall shall be necessary to enclose the same. Cellar stairs
Brick enclosure not required

Fire Stops.

24. In all frame buildings which are to be lathed and plastered or otherwise sheathed on the inside, the spaces between such parts of the floor joist or beams that rest upon the studs, walls or upon partition heads shall be filled in solid for the depth of the joist or beam and between the studs or uprights to the depth of the latter to a height of six inches above the top floor joint or beams with suitable incombustible materials. At ends of beams in stud walls and in partitions resting over each other

25. The fire stop shall extend around all the stud walls of the buildings, supporting the filling material where necessary on strips of wood nailed between studs, and in all stud partitions that rest directly over each other, and thus form a horizontal line of incombustible material to effectually cut off draft openings from storey to storey through floors, stud walls and partitions. Horizontal body of material

Plumbing, Drainage and Heating of Frame Buildings.

26. The regulations applying to brick buildings governing plumbing, drainage and heating, also steam and hot air pipes and registers, where same extend through or along stud partitions, shall also apply to frame buildings. Regulations

Frame Buildings Altered.

New portion
to comply with
requirements
of this section

27. Frame buildings may be altered, extended, raised or repaired, provided the new portions comply with the provisions of this section.

Occupancy by More Than Six Families.

Limiting
height

28. No frame building shall hereafter be erected exceeding three storeys in height to be occupied by more than six families.

Limiting
occupancy

29. Nor shall any frame building already erected, be altered to more than three storeys in height, to be occupied by more than six families.

Veneered Buildings.

Veneered frame
buildings

30. Frame buildings veneered on the outside with four inches of brick or stone work shall be deemed frame buildings, but such brick or stone work shall be supported on a continuous foundation of masonry and shall be properly anchored to the frame structure.

Limiting
height

31. The height of any such veneered building shall not exceed two storeys and attic above the basement.

Brick Buildings Outside of Fire Limits.

Reasonable
modification of
code require-
ments allowed

32. Outside of the fire limits, when any brick, stone or concrete building is to be erected of a class that could, under this By-Law be constructed of wood, the Inspector of Buildings is hereby authorized and directed to allow reasonable modifications of this By-Law relating to brick buildings, in consideration of incombustible material being used for walls instead of wood.

SECTION 148.

Frame Buildings Where Streets Are Not Established.

Plans and
statements

1. Within portions within the City of Edmonton where streets have not been or are not legally established and are outside of the prescribed fire limits, no building

or structure, other than small outhouses shall be erected without first filing plans and a detailed statement of the proposed construction and obtaining an approval therefor as provided in Section 4 of this By-law.

SECTION 149.

Unsafe Buildings—Surveys—Court Proceedings.

1. Any building or bulidings, part or parts of buildings, staging or other structure in the City of Edmonton, that from any cause may now be, or shall at any time hereafter become dangerous or unsafe, may be taken down and removed, or made safe and secure in the manner following:

To be removed
or made safe

2. Immediately upon such unsafe or dangerous building or buildings or part or parts of a building, staging or structure being so reported by any of the officers of said Department of Buildings the same shall be immediately entered upon a docket of unsafe buildings to be kept by the Inspector of Buildings.

Reports of
unsafe build-
ings to be
docketed

3. And the owner, or some one of the owners, executors, administrators, agents, lessees, or any other person or persons who may have a vested or contingent interest in the same may be served with a printed or written notice containing a description of the premises or structure deemed unsafe or dangerous, requiring the same to be made safe and secure or removed, as the same may be deemed necessary by the Inspector of Buildings.

Notice of
requirement
may be served
on representa-
tive of owner

4. Which said notice shall require the person or persons thus served to immediately certify to the said Inspector his or their assent or refusal to secure or remove the same.

Assent or
refusal to be
given

SECTION 150.

Surveys on Unsafe Buildings.

1. If the person or persons so served with notice shall immediately give his or their assent to the securing or removal of said unsafe or dangerous building, premises or structure, he or they shall be allowed until one o'clock

Time allowed
to make
promises safe

p.m. of the day following the service of such notice, in which to commence the securing or removal of the same; and he or they shall employ sufficient labor and assistance to secure or remove the same as expeditiously as the same can be done.

Refusal or neglect to comply with requirements

2. But upon his or their refusal or neglect to comply with any of the requirements of said notice so served, a further notice shall be served upon the person or persons heretofore named and in the manner heretofore prescribed, notifying him or them that a survey of the premises named in the said notice will be made at the time and place therein named, which time may not be less than twenty-four hours and not more than three days from the time of the service of such notice, by three competent persons.

Surveyors.

An official of Building Department

3. One of whom shall be the Inspector of Buildings, or a Superintendent of Buildings, or a Sub-Inspector, designated in writing by said Inspector.

An architect, engineer or builder appointed by commission of buildings

4. Another of whom shall be an Architect, Civil Engineer or builder of at least two years' practice in the City of Edmonton appointed by the Commissioners of the City, but no one such Architect, Civil Engineer or Builder shall be so appointed to serve upon any survey oftener than once in any calendar month.

Architect, engineer or builder representing owner

5. Another of whom shall be appointed by the person or persons thus notified, and who shall be a practical builder, architect or civil engineer, upon whose neglect or refusal to appoint such surveyor however, the said other two surveyors shall make such survey;

In case of disagreement a third surveyor to be appointed

6. And in case of a disagreement of the latter they shall appoint a third person to take part in such survey, who shall also be a practical builder, architect or civil engineer of at least two years' practice, and the decision of the said surveyor shall be final.

Reports of surveyors

7. And that in case the said premises shall be reported unsafe or dangerous under such survey, the said report will be placed before a court therein named hav-

ing jurisdiction to the extent of one thousand dollars, and that a trial upon the allegations and statements contained in the said notice of survey, will be had before this court, at the time and place therein named, to determine whether said unsafe or dangerous building or premises shall be repaired and secured or taken down and removed.

8. And a report of such survey, reduced to writing shall constitute the issue to be placed before the court for trial. Issue for trial

A copy of said report of survey shall be posted on the building by the person holding the survey, immediately on their signing the same.

Pay of Architect, Civil Engineer or Builder on Survey.

9. The architect, civil engineer or builder appointed by the Commissioners of the City, as hereinbefore provided, who may act on any survey called in accordance with the provisions of this By-Law, shall be entitled to and receive the sum of twenty-five dollars, to be paid by the City Treasurer upon the voucher of the Inspector of Buildings and City Commissioners. Amount and method of payment

SECTION 151.

Applications for Order to Remove Violations and to Vacate Buildings.

1. In case any notice or direction authorized to be issued by this By-Law is not complied with within the time designated in said notice the City of Edmonton by the City Solicitor, may, at the request of the Inspector of Buildings apply to the Supreme Court of Alberta at a special term thereof, for an order directing said Inspector to proceed and make the alterations or remove the violation or violations, as the same may be specified in said notice or direction. Proceedings in case notice is not complied with

2. Whenever any notice or direction so authorized, shall have been served as directed in this By-Law, and the same shall not have been complied with within the time designated therein, the City Solicitor may, at the request of the Inspector of Buildings, in addition to, or in lieu of the remedy last above provided, apply to the When notice requiring fire escapes is not complied with order of court may be obtained to vacate building

Supreme Court of Alberta at a special term thereof, for an order directing the said occupant to vacate such building or premises, or so much thereof as said Inspector may deem necessary, and prohibiting the same to be used or occupied for any purpose specified in said order until such notice shall have been complied with.

Expenses, etc.
in carrying out
order of court
to be a lien on
premises

3. The expenses and disbursements incurred in the carrying out of said orders, shall become a lien upon said building premises named in the said notice from the time of filing of a copy of the said notice, with a notice of the pendency of the action or proceeding as provided in this By-law, taken thereunder in the offices of the Clerk of the county where the property affected by such action, suit or proceeding is located; and the said Supreme Court, or a judge or justice thereof, to whom application shall be made, is hereby authorized and directed to grant any of the orders above named, and to take such proceedings as shall be necessary to make the same effectual, and any such judge or justice to whom application shall be made is hereby authorized and directed to enforce such lien in accordance with the mechanics' lien laws applicable to the City of Edmonton.

Authority to
enforce lien

Duty of person
upon whom
service of
notice may be
made

4. And in case any of the notices herein mentioned shall be served upon any lessee or party in possession of the building or premises therein described, it shall be the duty of the person upon whom such service is made to give immediate notice to the owner or agent of the said building named in notice, if the same shall be known to the said person personally.

Notice by mail

5. If such person shall be within the limits of the City of Edmonton and his residence known to such person, and if not within such City, then by depositing a copy of said notice in any post office in the City of Edmonton properly enclosed and addressed to such owner or agent, at his then place of residence, if known, and by paying the postage thereon.

Liability of a
lessee or person
in possession

6. And in case any lessees or party in possession shall neglect or refuse to give such notice as herein provided, he shall be personally liable to the owner or owners of said building or premises for all damages he or they shall sustain by reason thereof.

SECTION 152.

Recovery of Bodies Under Fallen Buildings—Buildings
in Danger of Falling—Stoppage of Work
on Buildings.

Recovery of Bodies under Fallen Buildings.

1. In case of the falling of any building or part thereof in the City of Edmonton where persons are known or believed to be buried under the ruin thereof, it shall be the duty of the Chief of the Fire Department to cause an examination of the premises to be made for the recovery of the bodies of the killed and injured.

When persons
are buried
under ruins

2. Whenever, in making such examination, it shall be necessary to remove from the premises any debris, it shall be the duty of the Superintendents of any and all other of the Departments of the City of Edmonton when called upon by the Department of Buildings to co-operate and to provide a suitable and convenient dumping place for the deposit of such debris, and give such other assistance as required.

City Depart-
ments to
co-operate

Buildings in Immediate Danger of Falling.

3. In case there shall be in the opinion of the Inspector of Buildings, actual and immediate danger of the falling of any building or part thereof so as to endanger life or property, such Inspector shall cause the necessary work to be done to render said building or part thereof temporarily safe until the proper proceedings can be taken as in the case of an unsafe building as provided for in this By-law.

To be made
temporarily
safe

4. The Inspector of Buildings is hereby authorized and empowered in such cases, and also where any building or part thereof has fallen, and life is endangered by the occupation thereof, to order and require the inmates and occupants of any such building or part thereof to vacate the same forthwith.

Authority to
vacate
buildings

5. The said Inspector may, when necessary for the public safety, temporarily close the sidewalks and streets adjacent to such building or part thereof, and prohibit

Authority to
temporarily
close sidewalks
and streets

the same from being used, and the Police Department, when called upon by the said Inspector of Buildings to co-operate shall enforce such orders or requirements.

To Perform the Humane Work.

City to pay expenses of recovering bodies and avoiding disaster from falling building

6. For the aforesaid purposes the said Chief of the Fire Department, or the Inspector of the Department of Buildings, as the case may be, shall employ such laborers and materials as may be necessary to perform said work as speedily as possible.

SECTION 153.

Stoppage of Work on Buildings.

Power conferred on Inspector to stop work on buildings dangerous to life and property

1. In case there shall be, in the opinion of the Inspector of Buildings, danger of life or property by reason of any defective or illegal work, or work in violation of or not in compliance with any of the provisions or requirements of this By-law, the Inspector of Buildings or such person as may be designated by him shall have the right, and he is hereby authorized and empowered to order all further work to be stopped in and about said building, and to require all persons in and about said building forthwith to vacate the same, and to cause such work to be done in or about the building as in his judgment may be necessary to remove any danger therefrom, and the Inspector of Buildings may, when necessary for the public safety, temporarily close sidewalks and streets adjacent to said building or part thereof, and the Police Department when called upon by the Inspector of Buildings to co-operate, shall enforce such orders or requirements.

SECTION 154.

Seal, Badges, Uniforms—Officers of Department of Buildings—Officers of Fire Department
May Enter Buildings.

Seal.

Official seal

1. The Inspector of Buildings shall adopt a seal and direct its use in the Department of Buildings.

Badges.

2. Suitable metal badges of office shall be provided by the Department of Buildings, each badge to be numbered for all officials of the said Department having the right to enter buildings or premises, and to be worn conspicuously by them during their hours of public service. Said badges shall be and remain the property of the Department of Buildings.

To be
conspicuously
displayed

Uniforms.

3. The Inspector of Buildings may prescribe a suitable uniform to be worn by each and all of the before mentioned officials during their hours of public service.

To be worn
during hours
of public duty

Officers of Department of Buildings May Enter Buildings and Premises.

4. All the officials of the Department of Buildings so far as it may be necessary for the performance of their respective duties, shall have the right to enter any building or premises in said City, upon showing their badge of office.

In the neces-
sary perform-
ance of their
business

SECTION 155.

Officers of Fire Department—Right to Enter Buildings, Etc. For Purposes of Examination.

1. The Chief of the Fire Department and his officers or agents, under the direction of the said Chief, or either of them, are hereby empowered at any and all times to enter into all existing buildings, structures and premises and all buildings and structures in course of construction or alteration in the City of Edmonton for the purpose of ascertaining all violation of any of the provisions of this By-Law, or of any other ordinance of the said City relating to stoves and pipes thereto, ranges, furnaces, and heating apparatus of any kind whatsoever, including chimneys, flues, pipes, with which the same may be connected, engine rooms, boiler rooms, ovens, kettles, chemical apparatus and also unlawful quantities of explosives, explosive compounds, petroleum and coal oils, chemicals, vegetable products.

Buildings,
structures and
premises

Orders and
directions

ashes, combustible materials and refuse matter, and other things which in his or their opinion may be dangerous in causing or promoting fire or dangerous to the firemen or occupants in case of fire, and of ascertaining all other violations of any of the provisions of this By-law, or of any other ordinance of the said City; and upon finding that any such building or structure is defective or dangerous to life or property or liable to become so in the event of panic or fire from any cause, including the yards and premises connected with any such building or structure, the Chief may thereupon issue orders or special directions either printed or written, directing the owner, lessees or occupants to alter, remove or remedy the same in such manner and within such reasonable time as may be necessary and in respect thereto may authorize and direct the use of such materials and appliances as shall be deemed proper and necessary; and in case of neglect or refusal so to do within the time prescribed by such orders or directions, the said Chief shall cause said alteration, removal or other necessary act or work to be done, and the expense thereof shall be charged to the party so offending, to be issued for the recovery in the manner herein provided for the recovery of fines and penalties under this By-law or other City Ordinances.

In case of
neglect or
refusal to
comply

Complaints to
be investigated

Any complaint made to the Chief of the Fire Department by any citizen that any building, structure or premises are in a dangerous or unsafe condition shall be investigated by said Chief, and if upon investigation the complaint is well founded the said Chief shall take action as herein provided.

SECTION 156.

Existing Suits and Liabilities—Invalidity of One Section Not to Invalidate Another.

Existing Suits and Liabilities.

Not to affect
past rights and
liabilities

1. Nothing in this By-law contained shall be construed to affect any suit or proceeding now pending in any court, or any rights acquired, or liability incurred, nor any cause or causes of action accrued or existing, under any act or ordinance repealed hereby. Nor shall any right or remedy of any character be lost, impaired or affected by this By-law.

SECTION 157.

Invalidity of One Section Not to Invalidate Any Other.

1. The invalidity of any section or provision of this By-Law shall not invalidate any other section or provision thereof.

SECTION 158.

LUMBER AND WOOD YARDS.

No lumber or wood in any wood yard or lumber yard shall be piled within a distance of ten feet from any building or other structure nor piled to a height greater than eight (8) feet next to any street, lane, public way or any railway, provided they are established in isolated location and under such conditions as the Inspector of Buildings may prescribe including location, but they shall not be established within the first fire limits.

SECTION 159.

1. All slaughter houses, tanneries, soap factories or laundering works, oil refineries, paint and varnish factories, powder mills, fire works or any other factory hereafter erected which from its nature, the material used or manufactured therein shall be dangerous in causing or promoting fires, shall be erected in isolated locations and under such conditions, as the Inspector of Buildings may prescribe including locations.

Slaughter
houses and
manufactures

SECTION 160.

1. No person shall hereafter carry on within the limits of the City of Edmonton the business, occupation or calling of moving buildings until he shall have procured a license to do so.

Moving
buildings

2. The license shall be \$10.00 per annum and shall be applied for and issued in accordance with the provisions of By-law 178 of the City of Edmonton. No license shall be issued unless and until the applicant shall have given to the City a bond, himself in the sum

of \$500.00 and sufficient surety or sureties in the sum of \$500.00 to the satisfaction of the Commissioners, which bond shall be conditions among other things that the applicant will pay all fees and charges payable under this or any other By-law of this City and observe and abide by all rules and regulations from time to time in force respecting the moving of buildings within the City and will hold harmless and indemnified the City from and against any damage or loss it may be put to by reason of the City permitting the applicant to carry on his business within the City and will in all things strictly comply with the conditions of his license and the permit issued to him by the Building Inspector.

3. No building or part of a building shall be moved nor shall any person be engaged in moving the same within the limits of the City whether from one place to another on the same lot or otherwise; until the licensee engaged to move the same shall have obtained from the Building Inspector a permit, which permit shall define the route to be taken, the precaution to be observed to guard against damage by reason of the licensee being allowed to occupy any of the streets, lanes or highways. Provided however that nothing herein contained shall forbid persons moving small buildings of ten by twelve feet or under from one part of their lot to another provided no street or lane be crossed.

4. Buildings exceeding twenty-five feet in height, loaded shall not be moved along or across any street or lane where telephone, electric light or street railway wires are located.

5. Any person or persons moving any building along or across any street, lane or highway within the City shall pay to the Building Inspector a permit fee of Fifty cents and a further sum of \$2.50 for every day of twenty-four hours, or portion thereof, that such building or any part thereof shall be upon any such street, lane or highway, and the Building Inspector shall, before issuing any permit, require the applicant to deposit with the City Treasurer such sum or sums as the departments affected may state to cover any charge that may be made necessary by the reason of the granting of the application and in the event of the sum or

sums so deposited being more than sufficient the balance shall be refunded and in the event of a deficiency the balance shall be paid by the person obtaining the permit.

6. No person moving any building shall cut or damage any telephone cable nor interfere with, handle or permit to be handled, power, light or telephone wires, or obstruct street car traffic, nor cut or handle any wire connected with the street car service.

7. It shall be the duty of the Inspector of Buildings to forward a copy of all moving permits as soon as issued to the Street Railway, Electric Light and Power, Telephone and Fire Departments, also Railway Companies in order that these Departments and Companies may have due notice to take the necessary measures to properly care and protect the utilities and telegraph wires under their control while the said building or structure is occupying any portion of the streets.

SECTION 161.

Stables.

1. All floors of either public or private stables shall be constructed of concrete at least four inches thick, with a smoothly trowelled wearing surface three-quarters of an inch thick composed of Portland Cement and equal quantity of sand. Concrete floors

No floor of stables shall be supported on wood joists or laid on plank.

2. Provided, however that within the stalls that portion of the concrete floors may be covered with plank, wood blocks or other suitable material, the whole made water-tight. Wood floors

3. All stall floors shall drain into gutters the said gutters and all places for washing vehicles shall be connected to a trap catch basin and from such catch basin proper connections must be made to the public sewer. Opening from gutters to drains shall be protected by iron strainers set in iron frames so as to be removable. Drainage

Drainage pipes shall be not less than four inches in diameter, except the lateral draining, two stalls or less

may be three inches diameter pipe. Catch basin must be constructed of brick laid in cement or concrete or iron and be at least two feet in any internal dimension and may be provided with vent pipe.

Flushing

4. A three-quarter inch hose bib equipped with hose shall be located that the drainage system may readily be flushed and it shall be required that all stable floors be thoroughly cleaned and flushed at least once a week.

Fire hose

5. Stables capable of accommodating ten or more animals shall be provided with fully equipped fire hose reels and racks connected to proper service of water supply through not less than one and one-half inch pipe the said reels and racks shall be of such number and so placed that with fifty feet of hose, three-quarter inch nozzle with a water pressure of twenty pounds per square inch, all parts of the building may be reached.

Manure

6. All stables, public and private, must be provided with water tight and tightly closed receptacles for manure of such dimensions as to contain all accumulation of manure and no manure shall be allowed to accumulate on the floor or on adjacent ground, provided, however, that on premises in the third fire limits or half acre or more in extent, manure may be attached with the approval of the Board of Health.

Exit

7. All receptacles for manure located within any building shall be vented through air-tight shafts of at least forty-eight inches square of sectional area, leading to and above the level of the roof and to a point more than twenty feet from any adjacent property.

All stables capable of accommodating ten or more animals shall have at least two exits five feet or more in width at least twenty feet apart and at opposite ends of the building when practicable. All stables capable of accommodating more than twenty animals and less than fifty animals shall have exits as hereinafter required, except at the width thereof shall be increased to six feet and shall be increased in width six inches for each additional five animals or additional exists provided as in the judgment of the Inspector of Buildings the exigency may require.

8. Stables located above the ground floor shall have runways equal in number and width to the exits required by this By-law terminating at the exits, said runways to have no greater pitch than six to twelve inches.

Runways

9. No portion of the ground adjacent to any stable shall be used for the purpose of allowing animals to stand or run at large, unless yard is tight boarded ten feet high.

Stable yards

10. It shall be unlawful to erect or connect a building to be used as a stable within the second fire limits to house animals for hire or as a boarding or dairy stable without there being filed with the application for a permit the written consent thereto of two-thirds of the owners of the remaining property located within 300 feet of the proposed stables (300 feet means from the extreme end of property or street line of lot or lots on which stable is to stand).

Public stables

11. No permit shall be issued for the erection or alteration of a building to be used as a stable or garage or for alterations intended to increase the capacity of a stable or garage unless the location of said stable be approved by the Board of Health.

Permit

12. The provisions of the foregoing section shall not apply to an application for permits to erect buildings for stable or garage purposes in the First Fire Limits provided said stables are of fireproof construction or to erect, alter or convert buildings for stable purposes when located more than 500 feet of any building occupied as a church, school, apartment or dwelling house.

Exceptions

13. No private stable in which horses or cows are kept or private garage shall be built within 70 feet of the street on which the lot fronts or within 30 feet of the street running parallel with the lot and a covered receptacle for the deposit of manure shall be provided as hereinbefore prescribed.

Private stables
or garages

14. All stables capable of accommodating eight or more animals shall be considered as public stables and subject to the provisions set forth in this By-law.

Number of
animals

15. All garages accommodating three or more motor cars or vehicles shall be considered as public garages and subject to the provisions set forth in this By-law.

SECTION 162.

An Ordinance Governing the Storage and Sale of Gasoline, Benzine, etc., in the City of Edmonton, Alta.

1. It shall be unlawful for any person, firm or corporation to keep for sale or store any gasoline or benzine within the limits of the City of Edmonton except as herein provided. The term gasoline or benzine wherever used shall mean any product of petroleum or any hydro-carbon liquid that will flash or emit any inflammable vapor below the temperature of 110 degrees far-
enheit.

2. One approved five gallon can of gasoline or gasoline in an approved portable filling tank may be kept above the ground. No one approved portable filling tank shall contain more than fifty gallons of gasoline. All said portable filling tanks shall be made of not less than 3-16 inch steel with welded joints, be properly vented, mounted on metal wheels with rubber tires and be equipped with an approved pump fitted with hose attached not to exceed eight feet in length fitted at the end with a ground shut off nozzle.

3. Tanks.—All other methods of storing gasoline shall be as follows: All gasoline shall be stored in steel tanks buried not less than three feet underground, the earth firmly tamped in place around and over them, outside the walls of all buildings except as provided for hereinafter in next paragraph. All tanks of 250 gallons capacity or under shall be constructed of not less than fourteen gauge galvanized tank steel, 250 to 500 gallons twelve gauge, over 500 gallons 3-16 inch galvanized tank steel riveted steel to steel joints soldered inside and out and coated with tar or other resisting material.

4. Tanks may also by special permit from the Fire Chief be buried not less than three feet under the sidewalk or lane provided that the filling pipes shall be

protected with a proper iron filling box, same to be flush with top of said sidewalk or lane and not to obstruct passage of traffic in any way.

5. Pipes.—All pipes must be galvanized, put together with litharge and lead out of the top of all tanks. No pipe shall be lower at any point than where same enters storage tank.

A filling pipe shall be connected with each tank extending up above the ground outside of all buildings capped with a water-tight screw cap. Each pipe shall have another pipe closely fitted inside same extending from the top of filling pipe to the bottom of tank fitted with a fine wire screen at the lower end and a tight fitting collar at the upper end to prevent any fumes or vapor from tank through the filling pipe.

6. Vent.—A vent pipe not less than one inch in diameter shall be connected with all storage tanks extending up the outside of the building at least fifteen feet above the ground, capped with a return bend covered with wire netting at least thirty mesh to the inch.

7. Pumps—All storage tanks shall be connected with an automatic closing valve pump, which may be located inside the building, not below the first floor and equipped with hose fitted with ground shut-off nozzle at the end so as to pump gasoline direct to the reservoir of an automobile. All pumps must be placed above the top of all tanks. No gravity, siphon or pressure system shall be used for taking gasoline from storage tanks. No drip or overflow pan with return pipe leading back to the tank shall be allowed.

8. Regulations.—All storage tanks shall be filled in the daytime. In no case shall any gasoline tanks or drums, empty or otherwise, be allowed to be kept about. Gasoline shall not be carried in open cans or be allowed to remain in an open can or receptacle of any kind. The reservoir of an automobile may be filled from storage tanks with an approved long distance pump fitted with an automatic closing valve, also hose nozzle, etc., or from approved portable filling tanks not to exceed fifty gallons each, and when not in use shall be kept near an entrance so that in case of fire it may be readily removed

from the building. Such approved filling tanks shall be constructed as prescribed in this By-law. No gasoline shall be put into or taken out of any automobile where there is an open light. All lamps on the automobile must be extinguished before filling. No light other than electricity shall be used for illuminating purposes in any garage. No stove, forge, torch or other furnace flame or fire shall be allowed in any room occupied as a public garage. All electric motors not actually a part of an automobile and all electric switches shall be located at least four and one-half feet above the floor. No smoking shall be allowed inside any building used as a public garage. Every garage of one thousand square feet of area or less shall at all times have on hand at least one barrel of clean sand and one additional barrel for every additional two thousand square feet of area placed in different parts of the main floor and repair shop. Each barrel to contain an iron scoop so as to throw sand on a gasoline or oil fire, also for absorbing waste oil that may fall upon the floor, such sand when saturated to be removed from the building. The use of sawdust for absorbing oils in any garage is strictly prohibited. All waste and rubbish of any kind must be kept at all times in metal receptacles fitted with tight covers. All repair shops shall be kept clean, and the floor free from oily waste or rags, same to be kept as stated above.

9. No oils, grease or other inflammable materials shall be allowed to be kept or stored in any locker. It shall be the duty of the Fire Chief to see that the provisions of this By-law relative to garages are complied with, and for that purpose he shall have access during the day time to any and all buildings used as garages.

SECTION 163.

Plumbing and Drainage.

1. No person, firm or corporation shall, after passing of this By-law engage in or work at the business of sanitary plumbing, unless such person, firm or corporation shall first have obtained a license permitting him or them to do so. License

2. No person shall receive a license of a Master Plumber unless he is of the full age of twenty-one years, has a place of business in this City, and presents evidence of his ability to install sanitary plumbing work.

3. The words "Licensed Plumber," as used in these regulations shall be deemed to mean any person, firm or corporation who runs a plumbing shop or any workman engaged by him or them to install or repair any sanitary or plumbing fixture which has or shall have any direct connection with the sanitary sewage system of the City.

4. Licensed Master Plumbers shall employ only licensed operative plumbers, and shall not permit or allow any work to be done by or for him or in connection with his business, except by such licensed operative plumbers, and their apprentices working under them.

5. In the case of a firm or corporation the license shall be issued to any one member of the firm or corporation, or to the Manager; if any member of the firm wishes to engage in actively installing or repairing plumbing fixtures, etc., he shall first obtain a license as provided for operative plumbers.

6. On the first application of any candidate for examination the board shall appoint an examination within three days. If they shall fail to do so the candidate shall be given a permit to work until the next examination is appointed. Examination
masters

7. Any person wishing to engage in the plumbing business as a Master Plumber, shall prove his ability as a Master Plumber to the satisfaction of the Board

of Examiners hereinafter provided, and on the payment of a fee of Five Dollars (\$5.00).

Operatives

8. Every operative plumber wishing to work at the plumbing business in the City shall prove his qualifications as an operative plumber before the Board of Examiners.

9. The Board of Examiners shall consist of one Master Plumber and one operative plumber (who shall be appointed by the Board of Health) and the Plumbing Inspector, and the Commissioners of the City of Edmonton shall pay the said Master Plumber and Operative Plumber such reasonable fees for acting as such Examiners as they (the Commissioners) shall think fit.

10. The examination shall consist of three parts, viz.: Practice, Theory and Drawing, and the marks for these shall be 60, 20 and 20 and respectively.

11. Persons who receive 75 per cent. of the total marks shall be entitled to a license, those who receive 65 to 75 per cent. of the total marks shall have the opportunity of another examination after two (2) months, and those failing to get 65 per cent. of the total marks cannot apply for further examination until six (6) months after first hearing.

12. The sum of Five Dollars (\$5.00) shall be paid by each applicant at the time of entering for the examination to cover the cost of same.

Renewals

13. All licenses shall expire on the 31st day of December in each year, the fee for renewal of same shall be: Master Plumbers \$2.00, Operative Plumbers \$1.00, per annum.

Master and
operative
responsible

14. Plumbers holding licenses who neglect or refuse to comply with the provisions of this By-law may have their license cancelled in which case they shall be debarred from further engaging in any plumbing work in the City.

15. Any person having had his license cancelled and wishing to continue at the plumbing trade in Edmonton shall rectify his past errors and produce suffi-

cient evidence of good faith, that in future he will live up to the requirements of this By-Law, in which case he shall be granted a new license as before provided, but cannot renew his previous one.

16. Any licensed plumber found lending his name to any unauthorized person shall be struck off the list, and not allowed to take out a license in respect of plumbing.

17. All plumbing, house drainage and ventilation in the City shall be made and constructed in accordance with the following rules and regulations, which shall be binding on all parties concerned.

18. No plumbing work shall be done or drain laid in connection with any building until an application to do so shall have been filed at the office of the Plumbing Inspector on a blank form, copies of which will be furnished when desired without charge. Application

19. Applications must be made when alterations are contemplated to plumbing in existing buildings.

20. Each application shall state the owners name, and the location of the property, street, and house number where possible, together with the number and description of the fittings to be connected.

21. A proper drawing shall be furnished with the application to clearly show the proposed plumbing work. It shall be a drawing on paper or tracing linen or a blue print. A scale being preferred.

22. With each application shall be deposited the following amounts to cover the cost of inspection and entering records: Fees

23. For four fixtures or under, the sum of One Dollar (\$1.00), and for every fixture over four, the sum of twenty-five cents (25c) per fixture.

24. The Plumbing Inspector shall be notified in writing when any work is ready for inspection, and all work must be left uncovered and inspection shall be made within two working days after receipt of notice. Inspection

Testing

25. The plugs, machine, and all apparatus and labor necessary for conducting the tests shall be furnished by the Master Plumber executing the work.

Water test

26. In new plumbing work the pipes and traps shall be tested by sealing up all openings except the upper end of the soil pipe stack and filling the complete system with water. Where it is not practical to fill the system with water on account only of the climatic conditions, an air pressure test of five (5) pounds to the square inch shall be accepted. The air pressure test shall be applied with a suitable force pump having a smoke chamber attached, and a mercury pressure gauge, and where it is impossible to test the entire system at one time, the vertical stacks may be tested independent of the drain, but a test shall be applied to the drain before covering over, in which case a head of water not less than a depth of 10 feet will be required for such test.

Final test

27. All finished work shall be tested by the smoke test, or other reliable and approved test.

28. When it is desirable to use any part or parts of a plumbing system before the whole is finished, such part or parts shall be tested and approved before being used.

29. In the case of old or existing plumbing work the system shall be tested for a final test.

30. A certificate shall be attached to all plumbing work, at the time of testing, stating the results of the test.

Defective work

31. Cracked or defective pipes or fittings shall be removed and replaced by sound material, defective joints shall be made tight, and every part of the work shall be made to conform with these regulations.

Material and workmanship

32. The material used shall be of good quality, and free from defects and the work shall be executed in a thorough and workman-like manner.

33. No soil, waste or ventilating pipe shall be placed in an exterior wall of any frame building, and where

such pipes are placed in the exterior wall of brick, stone, etc., buildings, they shall be covered with woodwork on the inside of the building, so arranged that it may easily be removed.

34. Pipes which are beneath basement floors shall in no case be placed in brick or wood troughs, with wood or metal covers, but shall be covered with concrete or whatever material the upper part of the floor is composed of.

35. The entire plumbing and drainage system of any building shall be entirely separate and independent from that of any other except where there are two buildings on one lot, one in the rear of the other. If there is no sewer in the lane to which the rear building can connect, the sewer of the first building may be extended to serve such rear building.

36. Interior house drains shall be of medium or extra heavy cast iron pipe and shall have a fall of not less than a quarter of an inch to the foot where possible. Where water closets discharge into them, they shall be not less in diameter than four inches. Mains

37. No T shall be used on any soil, waste or drain pipe and no TY or double TY shall be used on any horizontal drain, no double hub or inverted joint shall be used on any pipe or drain when same is below a fixture of any kind; Prohibited fittings

The Use of Bands, Saddles or Sleeves is Prohibited.

38. In all buildings provided with basements there shall be installed on the main drain and within two feet of the point where the drain enters the building a clean-out equal in size to the diameter of the pipe (if same does not exceed six 6 inches) on which it is placed, the cover of which shall be affixed by means of two or more brass bolts or nuts and made gas-tight by means of a rubber gasket. Where possible this clean-out shall be accessible at all times, but if on account of the depth of the drain or pipe this may be impossible, or where more than one soil pipe is contained in any building separate clean-outs shall be placed at the foot of each stack. On all long horizontal runs of waste pipe a clean-out shall Clean out

be installed so that cleaning rods may be used in case of stoppage without having to break or take out any of the pipes or fittings.

Cleanout screws shall be installed on all soil, waste or drain pipes wherever a change in the direction of flow occurs, provided that the said line of pipe is ten feet or over in length and at all intervals of thirty-five feet.

Floor rests

39. Vertical stacks of soil vent, waste or rain water which are inside buildings and are connected with the sewer system shall be provided with floor rests or supports at intervals of not more than every second floor.

Soil, vent, and waste pipes

40. All soil, vent and waste pipe except as hereinafter specified for brass and lead branches shall be of medium or extra heavy cast iron with caulked joints or of wrought iron galvanized with screwed joints in which case the fittings shall be properly recessed and threaded drainage fittings.

41. Every vent and soil stack shall be extended undiminished in size to a point at least 8 inches and not more than one foot above the roof of the main building, and no vent pipe above any roof shall be less than four inches in diameter.

42. All four-inch vent stacks shall be increased to six inches before passing through the roof.

43. Where fixtures are installed in an extension or lean-to which has a window or windows overlooking it, the vent stack shall be carried up inside the main building and shall terminate as above.

44. The soil, waste or drain pipe shall be carried outside the foundation walls of the building for a distance of not less than three feet and shall not be diminished in size. The Plumber shall be responsible for the connection of this pipe with the outside sewer pipe. No stack to which any waste pipe is connected shall be less than two inches in diameter. •

45. Where soil pipes are necessarily placed within partitions or in recesses of walls, the same shall be cov-

ered with wood work so fastened with screws as to be readily removable.

46. In buildings where more than one water closet, and three other fixtures are installed, each and every trap shall be separately ventilated by an air vent pipe. In cases where the trap is two inches or less, the vent pipe shall start not more than six inches away from the water seal of the trap. In cases on larger size traps vent pipes shall start from the lead bend except slop sinks on trap standards. The highest water closet when located within three feet of the main soil pipe, and when there are not fixtures above it, need not be ventilated. There shall be at least twelve inches of lead pipe used above the floor in all vent connections.

47. Cast iron soil and waste pipes shall not weigh less than as follows:—

Size	Medium	Extra Heavy
2 inch diameter	4 lbs. per foot	5½ lbs. per foot
3 inch diameter	6 lbs. per foot	9 lbs. per foot
4 inch diameter	9 lbs. per foot	13 lbs. per foot
5 inch diameter	12 lbs. per foot	17 lbs. per foot
6 inch diameter	15 lbs. per foot	20 lbs. per foot

48. All cast iron soil pipes shall be thoroughly coated inside and outside with linseed oil after being cleaned. Galvanized iron soil pipes shall be designed and constructed as specified for the Durham system. Pipes coated with coal tar or varnish are not to be used.

49. Where vent pipes are used they shall be connected to the main soil pipe stack two feet above the highest and two feet below the lowest fixture, or in case the vent cannot be taken back to the stack at the top it may enter the open air independently, but no vent pipe above any roof shall be less than four inches in diameter. Vent pipes

Where vent pipes are combined, they shall be proportionately increased as follows:—

2.	1¼	Inch Vent Opening Into	1 1¼	Inch Vent
4.	1¼	Inch Vent Opening Into	1 1½	Inch Vent
2.	1½	Inch Vent Opening Into	1 1½	Inch Vent
12.	1½	Inch Vent Opening Into	1 2	Inch Vent
6.	2	Inch Vent Opening Into	1 2	Inch Vent
12.	2	Inch Vent Opening Into	1 2½	Inch Vent
24.	2	Inch Vent Opening Into	1 3	Inch Vent

No vent pipe shall be used as a soil pipe or waste pipe, and the material used for vent pipes shall be the same as that used for soil and waste pipes.

Sheet metal, wood, earthenware and chimney flues shall not be used for vent pipes.

Roof flange
or flashing

50. A roof flange or flashing made of copper or galvanized iron shall be affixed in such a manner as to prevent rain water from entering the building where the vent pipe passes through the roof and which shall form a dead air space of one inch between the vent pipe and such flashing. The cap of such flashing shall not be less than 2 inches in depth and shall fit tightly both the inside of the soil pipe and the outside of the flashing.

Soil pipe
fittings

51. All soil pipe fittings and fittings used on waste and vent pipes shall correspond in quality, weight and thickness with straight pipes.

Lead, soil,
waste or
vent pipes

52. Lead, soil, waste or vent pipes shall not weigh less than the following for the respective sizes:—

1¼	inch diameter,	2	lbs. per foot,	1¼	inch vent
1½	inch diameter,	2½	lbs. per foot,	1¼	inch vent
2	inch diameter,	3½	lbs. per foot,	1½	inch vent
2½	inch diameter,	5	lbs. per foot,	2	inch vent
3	inch diameter,	6	lbs. per foot,	2½	inch vent
4	inch diameter,	7½	lbs. per foot,	3	inch vent

The above table also shows the size of vent pipes to be used.

Joints

53. The joints on cast iron soil, waste, vent and drain pipes shall be made with oakum and molten lead; the oakum shall first be caulked into the hub, and molten lead run in to fill the hub, and afterwards caulked to make it gas and water tight, the amount of

lead in each joint shall be at least one inch in depth. Wrought iron pipes shall have screwed joints. All connections of iron to lead shall be made by means of a brass ferrule into which the lead pipe shall be carried and a wiped joint shall connect the lead pipe with the ferrule, the ferrule shall afterwards be caulked into the iron pipe in the usual manner; or the lead may be connected with the iron pipe by means of a solder nipple wiped on to the lead pipe and screwed into the iron pipe.

All wiped joints shall be full wiped plumbing joints not less than 2½ inches long, except in case of floor joints.

No flange, taft, cup, wiped cup or overcast joint will be allowed. Floor joints shall be block joints.

54. Branches on lead pipes shall enter the main pipes in the direction of the flow and shall form a TY or circular branch.

55. Porcelain water closets shall be connected with the lead bend by means of a cast brass floor flange. The lead shall be carefully flanged over the brass, which shall be bolted to the porcelain after a satisfactory jointing material has been freely applied to the brass and lead flange.

56. All cast and wrought soil pipes shall be supported by flanges or hubs resting on the floor when the pipes are vertical, but where the pipes are horizontal they shall be supported by wrought iron stirrups or bands fastened to the floor joists; such stirrups shall not be less in thickness and width than 1"x1-8" or its equivalent, or they may be supported by brick or cement piers.

Supports for
pipes

57. Verticle lead pipes shall be supported by regular tacks wiped on to the pipes, and fixed to the wall, etc., by round headed screws, and not at a greater distance from each other than 15 inches for all pipes of 2 inches in diameter or less; horizontal lead pipes shall be laid on boards in every case, and shall not be supported by hooks, bands or stirrups;; the board in all cases shall be the full length of the pipe when same is more than 16 inches in length.

Ferrules

58. Brass ferrules shall be 4 inches in length, and shall weigh not less than as follows:—

4 inch diameter	2 lbs.
3 inch diameter	1¾ lbs.
2 inch diameter	1¼ lbs.

Solder nipples

59. Soldering nipples shall be of heavy cast brass or heavy brass pipe.

Traps

60. Water sealing traps shall be of a pattern approved by the Plumbing Inspector.

No trap or other obstruction to the free flow of air through the whole course of the sewer and soil pipe shall be placed on the house sewer or soil pipe, except where a back water trap is necessary or advisable to prevent a back flow from the main sewer.

No cast lead trap of any description shall be allowed.

All traps, except those for cellar drains and those which form part of a fixture shall be of the non-siphoning principle.

Bath traps shall be 4 inch drawn lead drum traps with full size cleanout screw accessible from the top, and same shall be made with a centripetal or self-cleansing action.

Every water closet basin, bath tub or other fixture shall be separately and effectually trapped and the trap shall not be more than one foot from the outlet of the fixture, but in the case of laundry tubs, one trap (placed in the centre) may serve for two tubs.

All traps shall have at least 1½ inches of water seal and be set level as regards their water seal.

Rain water and cellar traps shall have a water seal of six inches and must not be less than three feet from the drain or soil pipe stack, and shall be at least six inches above the drain where possible.

No fixture shall drain through more than one trap.

61. The liquid waste from manufacturing establishments shall be so clarified or filtered in suitable tanks on the premises of the owner, that all substances injurious to the sewer or likely to produce a nuisance, shall be completely removed before discharging such waste into the sewer system; all such sedimentation tanks, traps and filter tanks shall be so arranged that they can be readily examined at all times by the Sanitary Inspector.

62. In all places, such as restaurants, hotels, or other places where large quantities of greasy water have to be thrown into the sewer, a grease trap shall be provided of sufficient size to freeze the grease, and retain it in the trap or with a water cooled jacket through which all the water drawn at the sink shall have to pass.

Grease
Traps

63. All traps except water closet traps shall be provided with heavy brass cleanout screws not less in diameter than one and a quarter inches.

Cleanouts
on traps

64. Refrigerator and safe wastes shall discharge in some place open to sight, and on the house or inlet side of a trap or fixture, and shall in no case be connected direct to the drain, waste, or soil pipe.

Refrigerator
overflow and
safe

65. Overflow pipes shall be governed by the same rule, except in the case of the overflow from such fixtures as water closets, basins, tubs, etc., where same shall be conveyed through the fixture trap and in no case shall any overflow pipe be connected direct to the soil pipe.

66. Wherever possible traps of the non-syphon principle shall be installed, and wherever a syphon trap is taken out of old plumbing work, it shall be replaced with a non-syphon trap.

Anti-syphon
traps

67. No cowl or return bend shall be placed at the top of a soil or vent pipe stack.

Cowls

67. Where any fixtures are installed in a room or compartment which is not lighted and ventilated by a window opening direct into the open air, a local vent pipe shall be provided, which shall not be less than three-inch diameter if same goes into the open air, and which shall be proportionately increased where such vents are combined together.

Local ventila-
tion

All water closets, urinals, etc., shall be provided with local ventilation where same is deemed necessary or advisable in the opinion of the Plumbing Inspector.

67. Every water closet shall be flushed by a sufficient quantity of water delivered from a tank which

Water closets

does not supply water for any other purpose, to insure at all times a clean closet bowl, the tank so arranged that when the flush has been started, it shall continue automatically until the required flush has been delivered, or it may be flushed by means of a flushometer.

In Public Buildings, such as schools, libraries, and that part of hotels to which the public are admitted, or have access, the water closets shall be provided with self-lifting seats, and automatic flushing apparatus.

Pan, valve, plunger, washouts, substitute closets or latrines are strictly forbidden.

No closet or other convenience which allows the escape into the house of air or gas which has been confined in any part of it, or in the soil or drain pipe, or which allows the accumulation of dirt or filth in or about it shall be used or fitted up for use.

Where people of both sexes are employed in a factory, works or any building used for business of any kind, the accommodation for males shall be separate and distinct from that of females, water closets for males shall be plainly marked "Men's Toilet" and that for females shall be plainly marked "Female Toilet."

Where buildings are used jointly for business and residential purposes separate water closets shall be provided.

In business houses at least one water closet shall be provided for every twenty-five male persons, and one for every twenty female persons, and accommodation shall be provided on every second floor.

70. Where urinals are installed they shall be sectional urinals of porcelain.

Urinals

Every urinal shall be regularly, automatically and intermittently flushed by at least one gallon of water for every section.

The automatic flushing tanks shall be regulated so as to flush accordingly as the urinals are used, but never at greater intervals than every fifteen minutes during the period of use.

Strainers

71. Waste pipes to all fixtures, except water closets shall be protected with permanently attached strainers.

All cellar drain traps shall have heavy cast iron strainers.

Prohibited
fittings and
connections

72. In no case shall a waste pipe from any fixture be connected to any water closet trap, lead bend, vent or re-vent connection for same, except in the case of

old or repair work, when waste pipe may be connected with a water closet bend, if same has the approval of the Plumbing Inspector.

The installation of wooden sinks and wooden laundry tubs in any building is prohibited.

All fixtures shall be of some non-absorbent material.

73. Any new building erected on any street, road or lane in which sewer and water mains exist shall be connected with the said mains, and at least a water closet and sink shall be installed in every case where the building is to be used for human habitation or for a workshop, factory, livery barn, etc.

Compulsory
connections

In the case of a private stable a water service and a drain from the floor and roof will be sufficient.

74. All plumbing and sanitary fixtures and the compartment or room in which the fixtures are installed shall be kept in a thorough clean and sanitary condition.

Cleanliness

75. The Medical Health Officer and Plumbing Inspector shall have the right at reasonable hours of the day and upon sufficient notice being given to the owner or occupant to enter upon and have access to all parts of any building or premises in which water is taken from the waterworks system or that is connected with the sewer system or that has any plumbing work installed therein if the same be within the City Limits.

Access to
buildings

76. Drains or drips from hot water or steam boilers shall not discharge direct into any soil, waste or drain pipe, but shall discharge openly into a catch basin or other fixture, and thence after being cooled into the sewer or drain.

Blow-off from
boilers

77. No woodwork shall be placed at the front or at the sides of any water closet bowl, wash basin, bath tub, sink or other fixture without the approval of the Plumbing Inspector.

Carpenter
work

Water closet seats shall be properly cushioned to prevent injury to the bowls.

78. All rain water pipes which connect directly with the sewer shall be trapped, the trap to be provided with a cleanout and no rain water pipe shall be used as a soil pipe or vice versa.

Rain water
leaders

Vertical rain water pipes outside of buildings may be of galvanized sheet iron, but that portion below the ground and for a distance of five feet above the ground shall be of cast or wrought iron pipe.

Rain water pipes inside buildings shall be of the same material and workmanship as soil pipes, and shall be subjected to the water test, excepting in the case of a short connection where the trap is in the basement, and the leader comes down the outside of the building. No rain water leader shall discharge openly on to any street, sidewalk or lane.

Old work

79. Old work shall conform to the before mentioned regulations and shall have a final test under which no defects or leakage become manifest.

80. In all livery barns, garages and other such buildings where quantities of sand and other matter from the floors, etc., are liable to enter the sewers, suitable catch basins built of good quality concrete, 18 inches square by 14 inches deep shall be installed with a water seal of at least 9 inches in depth.

Water services

81. Lead water pipes shall not weigh less than the following:

$\frac{3}{8}$ inch diameter		4 lbs. per yard
$\frac{1}{2}$ inch diameter		6 lbs. per yard
$\frac{5}{8}$ inch diameter		8 lbs. per yard
$\frac{3}{4}$ inch diameter		10 lbs. per yard
1 inch diameter		13 lbs. per yard
$1\frac{1}{2}$ inch diameter		18 lbs. per yard
2 inch diameter		24 lbs. per yard

Galvanized iron or brass water pipes shall withstand a hydraulic pressure of 200 lbs. per square inch, and the fittings shall correspond in strength with the pipes.

All water pipes shall be laid with due regard to freezing and in the basement they shall be graded with a fall to the stop and waste cock. No water pipe shall be carried along an outside wall without permission in writing from the Plumbing Inspector.

A stop and waste cock shall be placed on every water service in such a manner that it can be readily controlled at all times, as near the point of entry of the water pipe as is practical. In all tenement houses and

flats a compression stop cock shall be placed on both hot and cold water service pipes, so that the supply may be cut off any suite of rooms independent of any other part of the building.

In all buildings which have no basement under them the water pipes shall be protected by a box at least 12 inches by 12 inches inside cross section which shall extend from the underside of the ground floor to a depth of four feet below the earth level at that point. Said boxes shall be filled with dry sawdust or other approved material, earth in all cases excepted.

Where water pipes are laid in trenches during the cold weather, two feet of dry sawdust or other suitable material shall be laid over the pipes before trench is filled in.

On the water supply pipe, plumber must install a meter-piece to be supplied by the City.

At the lowest point of the hot water pipes a plug or draw-off cock shall be placed, and the pipes graded with a fall to this point.

When the Inspector has been called to any work, it shall be ready for inspection, and a charge of fifty cents will be made for any extra visit caused by the neglect of the plumber, and a charge of twenty-five cents will be made if the Inspector has to wait on the job, for every fifteen minutes he is delayed.

HOUSE DRAINS

82. Any person other than licensed plumbers desiring to engage in the business of tile pipe laying on or from private property to the City sewers shall first obtain a license and register his name and address at the office of the Building Inspector, and present evidence of his ability or competency to undertake such work.

Tile pipe
layers

83. When an application in writing is received and the applicant has furnished sufficient evidence as to his ability regarding the installation of sewers, he shall be granted a license on the payment of the sum of One (\$1.00) Dollar.

Any change in his address after that date shall at once be sent to the office of the Building Inspector.

- Application** 84. Before a private sewer is laid, an application must be filed in the office of the Plumbing Inspector and he, or other official appointed by him, shall lay out the work and no deviation therefrom shall be allowed. Where practicable the pipes shall be laid in one unbroken straight line from the main sewer to point where same enters the building. The water service pipes shall in every case be laid in right angles from a point where it is taken from the water mains and the work shall be laid out and completed as determined by the City.
- Fees** 85. The sum of fifty cents shall be paid with each application to cover the cost of inspection and entering records.
- Pipes and cement** 86. The pipes used in any private sewer shall be sound and free from any defects and shall be straight and cylindrical.
- All pipes shall be of vitrified earthenware (or iron) and no cement tile pipes shall be used.
- Portland cement only of good quality shall be used and capable of withstanding the standard tests for this cement.
- Tests** 87. All private sewers shall be subjected to water and smoke test, and if in the opinion of the Plumbing Inspector a marble test is necessary the sewer shall withstand same.
- For the purpose of the tests a junction or Y shall be placed as near the street or property line as possible.
- After the test has been made a proper earthenware stopper shall be inserted in the hub of the Y and the hub filled with cement mortar.
- Grade** 88. All sewer pipes shall be laid true to line and inclination and shall, have a rate of fall towards the outfall of not less than one inch for each distance of ten diameters of the pipe where possible.
- For 4 inch pipe 1 inch in 40 inches
 For 6 inch pipe 1 inch in 60 inches
 For 8 inch pipe 1 inch in 80 inches

89. The City of Edmonton shall be immune from any responsibility in the event of any person being injured on the works. Barriers

The owner or contractor shall maintain proper barriers and lights about such works so as to protect any person from injury.

90. Care shall be taken in back-filling to see that no stone or other hard material, calculated to injure or break any pipe or joint be allowed to come within a foot of the pipes. Backfilling

91. Tile pipes shall not be placed inside of the foundation walls of any building, nor shall they be placed nearer than three feet to a foundation wall except where a building is built up to the street or property line. Where tile pipes are prohibited

Penalties, etc.

1 Every person committing a breach of any of the provisions of this By-law, where no other penalty is specifically provided, on summary conviction be liable to a fine not exceeding \$100 exclusive of costs, and in default of payment of such fine and costs the same may be levied by distress and sale of the goods and chattels of the defendant or the defendant may be committed to jail or to the guard room of the Royal Northwest Mounted Police Force, or any lock-up for any time determined by the presiding justice, not exceeding thirty days with or without hard labor, unless such fine and costs, including the costs of committal and of his conveyance to the jail, guard room or lock-up, are sooner paid. Penalties

Where the breach of any of the provisions of this By-law is of a continuing nature or by any of the provisions hereof it is provided that any person shall do or perform any act or cease doing any act or cease maintaining any thing, the offender shall be liable to a penalty not exceeding \$25 for each day such default is continued.

Any building or erection put up, constructed or maintained, or being put up, constructed or maintained in contravention of any of the provisions of this By-law, shall be pulled down and removed, and the cost of such pulling down and removal shall be placed on the collector's roll against any lands of the owner, and shall

thereupon become and be collected along with the ordinary taxes. Provided always that before the pulling down and removal of any such building or erection the owner thereof shall have been convicted of a breach of this By-law and shall have ten days' notice requiring him to pull down or remove such building or erection.

Vault Areas, Shipping, Unloading, etc.

Prism lights
and vault areas

2. No prism lights or vault areas shall be constructed on or under any street sidewalk, lane or other public place without the owner desiring to construct the same, first making application to the Commissioners of the City of Edmonton for said vault areas or prism lights accompanied by plans and specifications showing in detail what is proposed to be erected, and upon the same being approved by the Commissioners, and enter into an agreement in the form of an encumbrance, under the Land Titles Act in the Form "A" hereto annexed, and upon the same being executed, such prism lights or vault areas may be erected in accordance with plans and specifications submitted and approved for which an annual rental of ten cents per square foot per annum will be charged, and the same shall be collected by the Treasurer for such part of the street, sidewalk, lane or other public place, including vault walls so occupied by said vault area, and that in the erection of such prism lights or vault areas, the prism lights will be set to the line and grade established by the City Engineer, and all sidewalk repairs or renewals incident to the erection of such prism lights or vault areas will be done by the City Engineer, the cost thereof to be borne by the owner of the property affected.

Shipping and
unloading
doors on streets

3. No shipping or unloading door communicating with the basement of any building will hereafter be allowed to be placed on any street of the City.

4. A fee or rental of two (2) cents per square foot per month shall be paid by builders for the use of any part of the street or sidewalk over two-thirds of the sidewalk, while occupied for the storage of building material, said fee to be collected by the Building Inspector at the time of issuing the permit.

5. The following shall be considered a basis in estimating the value of buildings:

Frame Stables,	1 storey high,	7c per cubic foot.
Frame Dwellings,	1 storey high,	10c per cubic foot.
Frame Dwellings,	1½ storey high,	12c per cubic foot.
Frame Dwellings,	2 storeys high,	16c per cubic foot.
Brick Dwellings,	1½ storeys high,	22c per cubic foot.
Brick Dwellings,	2 storeys high,	25c per cubic foot.

Blocks with frame

interiors up to 4 storeys high, 18c per cubic foot.

Fireproof buildings

of reinforced

concrete up to 6 storeys high, 30c per cubic foot.

(Or steel skeleton

construction),

same, 6 to 10 storeys high, 34c per cubic foot.

Other buildings not classified here, according to the character of the building.

6. The minimum fee for the issuance of a permit shall be for buildings and alterations up to the value of: Permit fees

\$500	\$.50
\$500 to \$2,000	1.00
\$2,000 to \$5,000	2.00
And for each additional \$5,000 or fractional part thereof over \$5,000	1.00

If a person shall commence the construction, alteration, repair, removal or demolition of any building without first taking out a permit therefor, he shall when subsequently taking out such permit be required to pay double the fees hereinabove mentioned and be subject to the penal provisions of this By-law.

Repeal.

From and after the coming into force of this By-law all By-laws and parts of By-laws inconsistent with the provisions hereof are hereby repealed. Repeal

This By-law shall come into effect on the first of October, 1912.

DONE and passed in Council this first day of August, 1912.

BY-LAW NO. 444.

A By-Law to Amend By-Law No. 417
(Building By-Law)

THE Municipal Council of the City of Edmonton, duly assembled, enacts as follows:

By-Law No. 417 of the City of Edmonton, intituled "A By-Law to Regulate the Construction, Alteration, "Repair, Removal and Inspection of Buildings and to "Prevent Accidents by Fire Within the City of Edmon- "ton," is hereby amended as follows:

1. Clause 46 of Section 163, by adding thereto the following words: "In any case where fixtures are located "more than ten (10) eet from the main vent pipe, sep- "arate revent connections shall be provided for each "fixture."

2. The words, "ten cents," wherever the same occur in the form of encumbrance provided in regard to vault areas, is hereby struck out, and the words "five cents" substituted therefor, and the said rental charge of five cents per square foot, shall be deemed to have been in force from the first day of October, 1912, and shall apply to all agreements in reference to vault areas whether excuted before or after said first day of October, and all charges and rentals for vault areas for the current year shall be adjusted accordingly.

DONE and PASSED in Council this Nineteenth Day of November, 1912.

GEO. S. ARMSTRONG, Mayor.

CHAS. ED. K. COX, Clerk.



FORM A

ENCUMBRANCE

WHEREAS.....
of the City of Edmonton, in the Province of Alberta,
.....hereinafter called "the owner,"
am the registered owner of an estate in fee simple in
Lot Numberedof Block Numbered
in the

AND WHEREAS.....the said owner, am desirous of constructing or building a vault or cellar under part of said streets in the front of and at the side of said lands, according to plans already deposited by me with the Inspector of Buildings of the City of Edmonton.

AND WHEREAS the Municipal Council of the Corporation have resolved to consent to the construction or building of said vault or cellar upon the terms and conditions hereinafter appearing.

NOW, THEREFORE, it is agreed as follows:

1. The Corporation hereby consents to the construction or building by me, the said owner, of the vault or cellar (plans whereof have already been deposited by me as aforesaid and have for the purpose of identification been signed by the Inspector of Buildings of the City of Edmonton and the owner of said lands), notwithstanding that such vault or cellar will, when completed, be partially beneath the sidewalk of said streets.

2. The portion of said streets to be occupied by said vault or cellar shall be not more than one-half of the full width of the sidewalk or pavement from the Building Line.

3. The Corporation hereby gives to the owner, heirs, executors, administrators and assigns, leave and license for a period of twenty years, subject to determination as hereinafter provided, to maintain said vault or cellar under said sidewalk, the owner paying to the Corporation an annual occupation charge of ten (10) cents per square foot, subject to increase as hereinafter provided for such part of said streets, including vault walls, as shall be used or occupied by

the said occupation charge to become due and payable as follows:

4. The hereby granted permission and license shall not be deemed to permit the owner to use any part of said street, sidewalk, vault or cellar for the purpose of making any entrance to said building or the basement thereof (save coal hole).

5. The owner will construct or build said vault or cellar in strict conformity with said deposited plan and in all respects in accordance with the By-law of the Corporation, and will thereafter maintain the same in conformity with the By-law of the Corporation from time to time in force, and in case by any such By-law the rental to be charged shall exceed 10 cents per square foot such increased rental shall be due and payable from the date of the passing of such By-law.

6. Immediately upon the completion of said vault or cellar, the said owner shall make good and reinstate all sidewalks to the satisfaction of the City Engineer; Provided that the owner may use as part of said reinstated sidewalks glass prisms of a kind to be approved of by the City Engineer, which prisms shall be imbedded in such manner as shall be ordered by the City Engineer.

7. The owner shall bear all risk and responsibility of and incidental to the building and construction of said vault or cellar, and if at any time or times hereafter any subsidence or other damage or injury shall result to said sidewalk or to any of the said Corporation's present or future public or municipally-owned works or any adjunct thereto or thing to be used in connection with the same or any of them laid in said streets or under such sidewalks by the Corporation, by reason of the building, construction or existence of said vault or cellar, the owner will forthwith on demand pay to the Corporation the amount of any expense incurred by it in making good and reinstating the same or any of them, and will at all times keep the Corporation indemnified against all claims, demands, proceedings, damages or costs by or at the instance of any person or corpora-

tion in relation to or in connection with the construction, building or existence of such vault or cellar or glass prisms, or any injury or accident arising from or by reason of the existence or use of the same or any of them.

8. If at any time during the continuance of this license it shall be deemed expedient by the Corporation or the City Commissioners, to repair said sidewalks or to lay new ones in lieu thereof, the owner will pay to the Corporation any difference in cost which may arise by reason of the existence of said vault or cellar under said sidewalks or any part thereof.

9. If at any time the Council of the Corporation or the Commissioners, upon report of the City Engineer, shall be of opinion that it is not reasonably practicable to construct or lay down any of its said present or future public or municipally-owned works or any adjunct thereto or thing to be used in connection with the same or any of them, without interfering with or passing through that part of the vault or cellar under said sidewalk, it shall be lawful for the Corporation or Commissioners, their agents, servants and contractors, to enter upon or into such vault or cellar upon giving two week's notice in writing of their intention to do so, and to construct and lay the same or any of them beneath or through said vault or cellar and for such purpose to break through the roof, floor and walls thereof and permanently to fill up and wall off such part thereof as may be required for the construction or laying of their said works or any of them, and to do all such other things as may be necessary for that purpose, the Corporation paying the cost thereof, notwithstanding any increased difficulty of work resulting from the existence of said vault or cellar; and in case any part of said vault or cellar shall be filled up or walled off a proportionate part of the rental hereinbefore provided for shall forthwith abate.

AND for the purpose of securing to the Corporation the said occupation charge and the due performance of all the covenants, conditions and provisoes to be performed by me, the owner, do hereby encumber the said lands for the benefit of the said The Corporation of the City of Edmonton, and

subject as aforesaid, the said Corporation shall be entitled to all powers and remedies given to an encumbrancee by the Land Titles Act.

10. Provided always that if the building to be erected upon said land shall at any time during said period of twenty years be destroyed or damaged by fire, storm, tempest or other accidental cause or be demolished, or should the Corporation hereafter by By-law do away with vaults or cellars beneath streets or highways or any part thereof the privilege and license hereby granted shall *ipso facto* cease and determine, and the Corporation may fill in or wall up said vault.

IN WITNESS WHEREOF the said parties have executed these presents.

SIGNED, SEALED AND DELIVERED
in the presence of

ALPHABETICAL INDEX

A

	Sec.	Page
Adjoining Walls	22	16
Adjoining Walls	36	39
Alcoves	46	43
Alcoves	53	54
Alterations to Buildings	3	2
Alterations to Buildings	143	190
Alterations to Buildings	144	190
Amendment to By-Law	...	236
Anchors	41	41
Anchors	60	64
Anchors, Pier	41	41
Apartment Hotel, Definition of	12	10
Apartment House, Definition of	9	9
Apartment Houses	53	47
Apartment Houses, Rear	53	52
Appeals	161	204
Applications for Order to Remove Violations and to Vacate Buildings	151	203
Approval of Plans	4	4
Arch, Segmental	107	115
Arches, Inverted	26	21
Arches and Lintels	42	41
Arches, Masonry	42	42
Arches of Portland Cement Concrete Plain or Rein- forced with Metal	106	112
Areas, Floor, for Brick Buildings	33	31
Areas, Frame Buildings Outside of Fire Limits	147	197
Area of Lot Allowed to be Occupied by Apartment Houses	53	49
Areaways	53	57
Areas for Vent Shafts	53	57
Ashlar	28	24
Ashlar	29	25
Attics in Peaked Roofs	72	75
Automatic Sprinklers	33	34
Automatic Sprinklers in Basement	103	103
Automatic Sprinklers in Theatres	141	180
Automatic Sprinklers in Theatres	141	181
Auxiliary Fire Appliances	103	103

B

Badges	154	207
Balconies	104	105
Base Course	26	20
Basement and Cellar, Meaning of	35	38
Basements and Cellar in Apartment Houses	53	57
Bay Windows	78	76
Beams, Fireproofing of	107	114

	Sec.	Page
Beams, Slabs and Girders, designs for	110	123
Beams, Rolled Steel and Wrought Iron	116	146
Beams, Rolled Steel and Wrought Iron	119	147
Beams, Wood	59	62
Beams, Wood, Bearings for	59	62
Beams, Wood, Bevel Ends	59	63
Beams, Wood, Calculate Safe Distributed Load	59	63
Beams, Wood, Cross Bridging for	59	63
Beams, Wood, Ends of, Not to Rest on Stud Partitions	59	63
Beams, Wood, near Flues	59	62
Beams, Wood, Minimum Thickness for	59	62
Beams, Wood, Trimmer, Header and Tail	59	62
Bearing Capacity of Soil	23	16
Bearing Walls, Definition of	28	22
Bearings for Wood Beams	59	62
Bending, Extreme Fibre Stresses	138	164
Benzine, Gasoline, etc., Storage and Sale of	162	214
Bevel Ends (Wood Beams)	59	63
Bodies Under Fallen Buildings, Recovery of	152	205
Boilers	85	85
Boilers	141	166
Bolting of Structural Work	123	149
Bolts and Washers for Timber Work	62	66
Borings	23	17
Bottoms of Shafts, Courts, Areas and Yards	53	57
Bottoms of Shafts, Courts, Areas and Yards	97	96
Brick, Quality of	15	11
Brick Buildings, Outside of Fire Limits	147	200
Brick and Masonry Work	28	23
Brick Partitions	31	28
Brick Partitions	33	31
Brick Partitions	49	45
Brick Piers, Isolated	28	24
Buildings Damaged by Fire	145	194
Buildings in Danger of Falling	152	205
Buildings Enlarged	3	2
Buildings Enlarged	143	189
Buildings, Miscellaneous	82	83
Buildings, Non-Fireproof	30	25
Buildings on Same Lots with Apartment Houses ..	53	53
Building Sites, Fencing in of	5a	5
Bulkheads on Roofs and Scuttles	93	92
Bulkheads of Stairs and Doors	104	109
By-Law, Amendment to	...	236

C

Caisson Work or Piers	25	20
Calculations, Strength of Materials	135	157
Cap-Stones	28	24
Cast Iron	21	14
Cast Iron	112	142
Cast Iron	117	146
Cast Iron Columns	112	142
Cast Iron Lintels	117	146
Cast Steel	21	14
Cellar Ceilings	58	61

	Sec.	Page
Cellar Floors	57	61
Cellar Partitions in Residence Buildings	50	45
Cellar Stairs	53	47
Cellars and Basements	53	57
Cellars to be Connected with Sewers	54	60
Cement, Sand and Inerts	110	131
Cements	17	12
Cements	110	131
Cement, Quality of	17	12
Cement and Lime Mortar	16	12
Cement Mortar	16	11
Cements, Tests of	17	12
Cements, Tests of	110	135
Centreing for Floor Arches	107	118
Centreing and Forms	110	135
Cheek Plates	61	66
Chimneys	53	56
Chimneys	65	68
Chimneys of Cupolas	67	71
Chimneys and Fireplaces	53	56
Chimneys and Fireplaces	65	68
Chimney Flues to be Lined with Pipe	65	69
Chimney Supports	66	70
Chases for Pipes	45	43
Chases, Aggregate Area Allowed	46	44
Clay Blocks, Hollow	45	43
Closets Prohibited Under First Storey Staircases ...	53	48
Coal Pockets	82	83
Cock Lofts	72	75
Column, Splices	110	129
Columns, Cast Iron	112	142
Columns, Double	113	144
Columns, Eccentrically Loaded	137	161
Columns, Fireproofing of	108	119
Columns, Fireproofing of	110	131
Columns, Footings for	28	24
Columns, Footings for	61	65
Columns, Insulation of, in Fireproof Buildings	108	119
Columns, Insulation of, in Non-Fireproof Buildings..	108	120
Columns, Reductions in Live Loads on	129	154
Columns, Reinforced Concrete	110	127
Columns, Spiral Reinforced	110	128
Columns, Steel and Wrought	111	140
Columns, Strength of	137	159
Columns, Structural Steel Encased in Concrete	110	128
Columns, Wood	61	65
Compression	138	162
Concrete Block Construction	110	136
Concrete Blocks, Inspection of	110	135
Concrete Blocks, License to Manufacture	110	140
Concrete Blocks, Test of	110	137
Concrete Columns, Reinforced	110	127
Concrete Piles	25	19
Concrete, Quality of	18	13
Concrete and Steel, Placing	110	133
Concrete, Steel in	110	132

	Sec.	Page
Concrete, Steel Construction	110	122
Construction, Iron and Steel	109	121
Construction, Reinforced Concrete	110	122
Corbeling	66	70
Cornices Damaged by Fire	92	92
Cornices and Gutters	92	91
Courts	53	50
Courts, Definition of	53	50
Courts Having Jurisdiction	150	202
Court Proceedings	149	201
Court or Yard Spaces	53	53
Cross Bridging for Beams	59	63
Cupolas, Chimneys of	67	71
Curtain Walls in Skeleton Construction Buildings ..	110	130



Dangerous Buildings	152	205
Dangerous Business	53	60
Dangerous Materials, Storage of in Apartment Houses	53	59
Date When By-Law is to Take Effect	...	235
Demolishing Buildings	5	4
Definition of Apartment House.....	9	9
Definition of Apartment Hotel	12	10
Definition of Bearing Walls	28	22
Definition of Courts	53	50
Definition of Frame Buildings	14	10
Definition of Height of Buildings	6	7
Definition of Height of Buildings	30	26
Definition of Hotel	12	9
Definition of Lodging-House	11	9
Definition of Office Buildings	13	10
Definition of Private Dwellings	8	8
Depth of Buildings, the Amount of	34	37
Detail Drawings	4	2
Doors in Dumb-Waiter Shafts	98	97
Doors and Stairs, Bulkheads of	104	109
Double Columns	113	144
Drainage	163	217
Drains, House	163	231
Drawings, Detail	4	2
Drop Ladders	104	108
Drying Rooms	87	88
Ducts for Pipes	70	74
Ducts for Ventilation	68	73
Dumb-Waiter Shafts	98	96
Dumb-Waiter Shafts, Doors in	98	97
Dumb-Waiter Shafts, Bottom and Top of.....	98	97
Dwelling, Private, Definition of	8	8
Dwelling House Class, Walls for	31	26



Elevators	96	94
Elevators, Grain	82	83

	Sec.	Page
Elevator Enclosures	97	95
Elevators in Hotels	99	98
Elevators, Inspection, Installation, Alterations and Operation of	101	98
Elevator Machinery, Enclosing of Same	97	96
Elevator Shafts, Bottom of	97	96
Enclosures and Protections, Building Inspector Em- powered to Act	80	82
Encumbrances on Fire Escapes	104	108
Ends of Wood Beams not to Rest on Partitions ...	59	63
Engineers' Stationary Ladders	76	78
Entrance to Basement	74	76
Entrances and Stairs	74	76
Examining Board, Plumbers'	163	218
Excavations	22	14
Excavations	22	15
Exhibition Buildings	83	84
Existing Buildings	53	55
Existing Buildings	144	190
Existing Suits and Liabilities	156	208
Expense for Examining into Strength of Floors	131	156

F

Face Brick, Roman Size	28	24
Factors of Safety	136	159
Fallen Buildings, Recovery of Bodies Under	152	205
Fences	146	195
Fibre Stresses, Extreme, Bending	138	164
Filing Plans and Statements	4	2
Filled Floors	107	118
Fillings, Various Between Floor Beams	107	116
Fire Appliances, Auxiliary	103	103
Fireproof Buildings	106	111
Fireproof Buildings, Floor Areas	33	32
Fireproof Buildings, Floor Areas	33	33
Fireproof Buildings, Floors in	106	112
Fireproof Buildings, Floors in	107	114
Fireproof Floor Filling	107	114
Fireproof Floor Filling, Strength for	107	118
Fireproof Hall and Permanent Partitions in Fire- proof Buildings	106	113
Fireproofing of Beams	107	114
Fireproofing of Columns	108	119
Fireproofing of Columns	110	131
Fireproofing of Girders	108	120
Fireproofing of Iron Work in Non-Fireproof Build- ings	108	120
Fire-Escape Balconies, Notice Plates on	104	109
Fire-Escapes	53	60
Fire-Escapes	104	104
Fire-Escapes, Incumbrances on	104	108
Fire-Escapes, Painting	104	108
Fire Limits	145	191
Fireplaces	53	56
Fireplaces	65	68

	Sec.	Page
Fireplaces and Chimneys	53	56
Fireplaces and Chimneys	65	68
Fire-Doors and Shutters	105	109
Fire-Doors and Shutters, Outside and Inside to be Closed at Night	105	111
Floor Arches, Centreing for	107	118
Floor Areas for Brick Buildings	33	31
Floor Areas, Fireproof Buildings	33	32
Floor Calculations Filled with Application to Build...	131	156
Floor Fillings	107	118
Floor Lights	78	79
Floor Loads	129	152
Floor Loads to be Distributed	130	154
Floor Openings	79	80
Floor Openings	107	118
Floors, Filled	107	118
Floors in Fireproof Buildings	106	112
Floors in Fireproof Buildings	107	114
Floors, Strength of Existing to be Calculated	131	154
Flues	65	68
Flues to be Clean	65	70
Flues, Hot Air	68	71
Footings for Columns	28	24
Footings for Columns	61	65
Footings, Pressure under	24	17
Footings, Stepped-Up	26	21
Forms and Centering for Concrete	110	135
Formula for Strength of Pile	25	18
Foundations	25	18
Foundations, Footings of	24	17
Foundations, Loads on	24	17
Foundation Walls	26	20
Foundations, Grillage in	26	21
Foundations, Metal in	25	19
Frame Buildings, Damaged	145	194
Frame Buildings, Definition of	14	10
Frame Buildings Outside the Fire Limits	147	196
Area	147	197
Chimneys	147	198
Construction	147	199
Fire Stops	147	199
Footings	147	197
Height	147	196
Occupancy	147	200
Plumbing	147	199
Roofings	147	197
Veneered Buildings	147	200
Walls	147	198
Frame Buildings, Temporary	146	195
Frame Buildings Where Streets Are Not Established.	148	200
Frame Buildings Within the Fire Limits	146	194
Framing and Connecting of Steel Work	121	148
Freezing of Mortar in Walls	29	25
Freezing of Concrete	110	134
Furnaces	85	85
Furred Walls	47	44

G

	Sec.	Page
Garages	84	84
Gas Brackets	90	90
Gas Pipes	90	89
Gas Pipe Installation, Rules and Regulations for....	90	90
Gasoline, Benzine, etc., Storage and Sale of	162	214
General Construction	70	74
Girders, Beams and Slabs, Designs for	110	123
Girders, Fireproofing of	108	120
Girders, Steel and Iron	115	145
Grain Elevators	82	83
Grillage in Foundations	26	21
Gutters and Cornices	92	91

H

Hallway and Stairway Enclosures	102	99
Hallways, Public	53	54
Header, Trimmer and Tail (Wood) Beams	59	62
Headers in Stone Walls	26	22
Heating Apparatus	85	85
Heating Apparatus, Notice as to	89	89
Heating Furnaces and Boilers	85	85
Height of Buildings, Definition of	0	7
Height of Buildings, Definition of	30	26
Height of Buildings Increased	91	91
Height of Building, Limiting Same	30	25
Height of Buildings, Measurement of	6	7
Height of Stories	35	37
Heading Courses in Brick Walls	28	24
Hollow Brick on Inside of Walls	45	43
Hollow Clay Blocks	45	43
Hollow Tile Partitions	49	45
Hot Air Flues	68	71
Hot Air Pipes in Walls	68	72
Hot Air Pipes in Closets	68	73
Hot Air Pipes Horizontal	68	73
Hot Water Heating	69	74
Hotel, Definition of	12	9
Hoistways	96	94
House Drains	163	231

I

Ice Houses	82	84
Inclosures and Protections, Building Inspector Empowered to Erect	80	82
Incumbrances on Fire-Escapes	104	108
Inerts, Cement and Sand	110	131
Inner Courts	53	51
Inspection of Concrete Blocks	110	135
Inspection of Elevators	101	98
Insulation of Columns in Fireproof Buildings	108	119
Insulation of Columns in Non-Fireproof Buildings...	108	120
Insulation of Iron Work	108	119
Invalidity of One Section Not to Invalidate Any Other	157	209

	Sec.	Page
Inverted Arches	26	21
Iron, Cast	21	14
Iron, Cast	112	142
Iron, Cast	117	146
Iron Columns and Girders Instead of Partition Walls.	31	28
Iron Columns, Wrought	111	140
Iron Lintels, Cast	117	146
Iron and Other Metal Fronts to be Filled in	127	151
Iron and Steel Construction	109	121
Iron and Steel Girders	115	145
Iron Work, Fireproofing of, in Non-Fireproof Buildings	108	120
Isolated Brick Piers	28	24

L

Ladders, Engineers'	76	78
Lathing, Inspection Previous to	5	4
Leaders from Roofs	95	94
Length of Building, Measurement of	7	8
Liabilities and Suits	156	208
License to Manufacture Concrete Blocks	110	140
License, Revocal of	110	139
Licenses, Plumbers'	163	217
Lien on Premises	151	204
Light Courts for Apartments	53	50
Light Shafts	48	44
Lighting and Ventilating of Rooms	53	53
Lights in Public Hallways	53	56
Lime Mortar	16	11
Limit of Time for Permits	4	3
Limiting Height of Buildings	30	25
Lintels	42	41
Lintels	117	146
Lintels and Arches	42	41
Lintels, Cast Iron	117	146
Load, Calculate Safe Distributed (Wood Beams).....	59	63
Load on Foundations	24	17
Loads, Floor	129	152
Loads, Floor, to be Distributed	130	154
Loads, Safe, for Masonry Work	135	157
Loads, Safe, for Rubble-Stone and Concrete	135	157
Lodging House, Definition of	11	9
Lot, Area of, Allowed to be Occupied by Apartment Houses	53	49
Louvres, Metal	48	44
Lowering Buildings	143	189
Lumber and Wood Yards	158	209

M

Main Stud Partitions	51	46
Mansard Roofs	91	91
Manufactories and Slaughter Houses	159	209
Masonry Arches	42	42
Masonry Work, Safe Load for	135	157

	Sec.	Page
Masonry and Brick Work	28	23
Materials, Quality of	15	11
Materials, Tests of	20	13
Materials, Weights of	134	158
Meaning of Basement and Cellar	35	38
Meaning of Storeys	35	38
Measurement of Height of Buildings	6	7
Measurement of Length and Width of Buildings.....	7	8
Metal in Foundations	25	19
Metal Fronts	127	151
Metal Fronts to be Filled in	7	8
Metal Louvres	48	44
Metal Skylights	78	79
Metal Window Frames and Sash and Wired Glass....	105	110
Mill Construction	63	66
Minimum Thickness of Slabs	110	130
Minimum Thickness for Wood Beams	59	62
Miscellaneous Buildings	82	83
Modifications	16	11
Mortar, Cement	16	11
Mortar, Cement and Lime	16	12
Mortar, Quality of	16	11
Mortar for Walls and Ashlar	29	25
Motion Pictures	142	184
Moving of Buildings	143	189
Moving of Buildings	160	209
Moving Pictures	142	184
Municipal Buildings	4	4

N

New Buildings	2	1
New Materials, Tests of	20	13
Non-Fireproof Buildings	30	25
Notice Plates on Fire-Escape Balconies	104	109
Notices of Violations	149	201
Notices of Violations	151	203
Notices May be Served by Inspector of Buildings....	80	82
	153	206

O

Occupation of Area of Inside Lot Limited	13	10
Occupation of Streets. Temporary	5a	5
Office Buildings, Definition of	13	10
Officers of Building Department	154	207
Officers of Fire Department	155	207
Openings in Interior Walls to Have Fire-Doors	105	111
Ordinary Repairs	4	3
Oriel Windows	73	76
Outer Courts	53	50

P

Painting Fire-Escapes	104	108
Painting of Structural Metal Work	123	152
Parapet Walls	43	42

	Sec.	Page
Partitions, Brick and Hollow Tile	49	45
Partitions, Cellar, in Residence Buildings	50	45
Partitions, Main Stud	51	46
Partitions, Permanent in Fireproof Buildings	106	113
Party Wall Posts	114	145
Penalties	164	233
Permit Fees	164	235
Permits, Limit of Time for	4	3
Persons Authorized to Act	4	2
Pier Anchors	41	41
Piers	28	22
Piers	28	23
Piers or Caisson Work	25	20
Piers, Isolated Brick	28	24
Piers and Walls of Coursed Stone	28	23
Pile, Formula for Strength of	25	18
Piles	25	18
Piles, Concrete	25	19
Pintles	61	65
Pipes, Chases for	45	43
Pipes, Hot Air, in Closets	68	73
Pipes, Hot Air, Horizontal	68	73
Pipes, Hot Air, in Walls	68	72
Pipe Openings Through Fireproof Floors	107	118
Pipes, Water and Gas	90	89
Places of Assemblage	140	165
Places of Assemblage	140	166
Placing Concrete and Steel	110	133
Plans, Approval of	4	4
Plans, Filing of	4	2
Plates, Cheek	61	66
Plates Under Ends of Lintels and Girders	118	146
Plumbing	147	199
Plumbing	163	217
Plumbing Pipes	69	74
Plumbers' Licenses	163	217
Portland Cement	110	131
Posts, Party Walls	114	145
Pressure Under Footings	24	17
Prism Lights	164	234
Privacy	53	55
Private Buildings	4	4
Private Dwellings, Definition of	8	8
Protection of Adjoining Skylights and Roofs	80	81
Protection of Adjoining Skylights and Roofs When Adjoining Owner Refuses to Protect	80	81
Protection of Columns	108	119
Protection of Pedestrians, Shed Covering for	80	80
Protection of Persons Employed on Buildings	81	82
Public Buildings	32	31
Public Buildings	140	165
Public Buildings	141	166
Public Hallways	53	54
Public Hallways, Lights in	53	56



	Sec.	Page
Quality of Brick	15	11
Quality of Cement	17	12
Quality of Concrete	18	13
Quality of Materials	15	11
Quality of Mortar	16	11
Quality of Timber	19	13



Raising Buildings	143	189
Ranges and Stoves	88	88
Rear Apartment Houses	53	52
Recovery of Bodies Under Fallen Buildings	152	205
Recesses	46	43
Recesses, Aggregate Area Allowed	46	44
Records	4	2
Registers	86	87
Reinforced Columns, Spiral	110	128
Reinforced Concrete Columns	110	127
Reinforced Concrete Construction	110	122
Reinforced Concrete, Proportion for Mixing	110	131
Reinforced Concrete, Unit Stresses	110	122
Rejection of Plans	4	4
Removal of Supports	110	135
Repairs, Ordinary	4	3
Repealing Inconsistent Ordinances	164	235
Revocal of License	110	139
Riveting Structural Members	122	148
Rolling Metal Shutters	105	110
Rolled Steel Beams	116	146
Rolled Steel Beams	119	147
Roman Size Face Brick	28	24
Roof Domes	107	118
Roofing for Brick and Frame Buildings	95	93
Roofing for Frame Buildings	147	196
Roofing, Leaders	95	93
Roofs, Mansard	91	91
Roofs, Opening in	79	80
Roofs and Scuttles, Bulkheads on	93	92
Rooms, Size of	53	54
Rubble-Stone Work	135	157
Rubble Walls	39	40
Rules and Regulations of Building Department.....	150	201
Rules and Regulations for Gas Pipe Installation.....	90	90

S

Safe Distributed Load, Calculate (Wood Beams)....	59	63
Safe Loads for Masonry Work	135	157
Safe Loads for Rubble-Stone and Concrete	135	157
Safety, Factors of	136	159
Safe and Storage of Gasoline, Benzine, etc.	162	214
Sand, Cement, and Inerts	110	131
Sand, Quality of	15	11
Sash and Window Frames, Metal, and Wired Glass..	105	110

	Sec.	Page
Scaffolds, Outside	80	80
Screens Under Elevator Sheaves	100	98
Scuttle Ladders	104	109
Scuttles	93	92
Scuttles and Roofs, Bulkheads on	93	92
Seal of Building Department	154	206
Segmental Arch	107	115
Service of Papers	150	201
Sewers, Cellars to be Connected With	54	60
Shafts, Dumb-Waiter	98	96
Shafts, Light and Vent	48	44
Shear	138	163
Shed Covering for Protection of Pedestrians	80	80
Sheds	146	195
Sheds and Inclosures Subject to Inspection	80	81
Shipping, Unloading Vault Areas	164	234
Show Windows	73	76
Shutters	105	109
Shutters to be Arranged so as to be Opened from the Outside	105	110
Shutters, Rolling Metal	105	110
Signs	146	195
Size of Rooms	53	54
Skeleton (Steel) Construction	109	121
Skeleton Construction Buildings, Curtain Walls in... ..	110	130
Skylights in Apartment Houses	53	56
Skylights over Dumb-Waiter Shafts	98	97
Skylights over Elevator Enclosures	97	96
Skylights for Fireproof Buildings	78	79
Skylights, Protection of Adjoining	80	81
Skylights, Protection of Adjoining when Owner Re- fuses Permission to Protect	80	81
Skylights over Public Passageways	78	79
Slabs, Beams and Girders, Designs for	110	123
Slabs, Flat	110	125
Slabs Minimum Thickness of	110	130
Slabs, Square and Rectangular	110	125
Slate and Stone Treads	77	78
Slaughter Houses and Manufactories	159	209
Smoke Houses	84	85
Smoke Pipe Through Roofs	68	71
Soil, Bearing Capacity of	23	16
Spaces, Studded Off	71	75
Spiral Reinforced Columns	110	128
Sprinklers, Automatic	33	34
Sprinklers, Automatic, in Basement	103	103
Sprinklers, Automatic, in Theatres	140	180
Sprinklers, Automatic, in Theatres	140	181
Stables	161	211
Stair Hallway Enclosures	102	99
Stairs and Doors, Bulkheads of	104	109
Stairs and Entrances	74	76
Stairs, Number as to Area	75	77
Standpipes	103	100
Statements, Filing of	4	2
Stationary Ladders, Engineers'	76	78

	Sec.	Page
Steam Heating	69	74
Steel, Cast	21	14
Steel Columns	111	120
Steel in Concrete	110	132
Steel and Iron Construction	109	121
Steel and Iron Girders	115	145
Steel, Placing Concrete and	110	133
Steel Work, Framing and Connecting of	121	148
Stepped-Up Footings	26	21
Stirrup Irons	59	62
Stone Posts Under Interior Columns	28	24
Stone Walls, Headers in	26	22
Stone Walls and Piers, Coursed	28	23
Stopping Work on Buildings	153	206
Storage of Dangerous Materials in Apartment Houses	53	59
Storage and Sale of Gasoline, Benzine, etc.	162	214
Storeys, Height of	35	37
Storeys, Meaning of	35	38
Stoves and Ranges	88	88
Straps for Beams	60	64
Streets, Temporary Occupation of	5a	5
Strength of Columns	137	159
Strength of Existing Floors to be Calculated	131	154
Strength for Fireproof Floor Fillings	107	118
Strength of Materials, Calculation of	135	157
Strength of Pile, Formula for	25	18
Strength of Temporary Supports	132	156
Stresses	110	122
Stresses	138	162
Stresses, Web	110	124
Structural Material	21	13
Structural Steel Columns, Encased in Concrete	110	128
Structural Work, Bolting of	123	149
Structural Work, Framing of	121	148
Studded-Off Spaces	71	75
Suits and Liabilities, Existing	156	208
Supports, Removal of	110	135
Supports, Vertical	129	154
Surveyors	150	202
Surveys on Unsafe Buildings	150	201

T

Tail, Trimmer and Header (Wood) Beams	59	62
Tanks	94	93
Tanks	162	214
Tee Beams, Limiting Width of Flange in	110	124
Templates	120	147
Temporary Frame Buildings	146	195
Temporary Occupation of Streets	5a	5
Temporary Supports, Strength of	132	156
Tension	138	163
Tests of Cements	17	12
Tests of Cements	110	135
Tests of Materials	20	13
Theatres	140	165

	Sec.	Page
Theatres	141	166
" Aisles	140	165
" Aisles	141	168
" Aisles	141	175
" Auditorium Seats	141	175
" Automatic Sprinklers	141	180-1
" Auxiliary Fire Apparatus	141	180-1
" Boiler, Location of	141	178
" Corridor from Court to Street	141	167
" Communications in Proscenium Wall	141	172
" Dressing Rooms	141	174
" Exits	141	174-5-6
" Fireproof Curtain at Proscenium Opening ..	141	171
" Fireproofing Scenery	141	173
" Hotel, Lodging House or Factory	141	170
" Lighting	141	181-2-3
" Location of Boiler	141	178
" Occupancy of Stores	141	169
" Open Courts	141	167-8
" Outside Balconies and Staircases	141	168-9
" Property Room	141	169
" Proscenium Wall	141	171-2
" Roof Garden	141	169
" Scenery, Fireproofing of	141	173
" Skylights, Heat and Smoke Vent	141	172
" Staircases	141	168-9-170
" Standpipe and Hose	141	176-7-8-179-180
" Storage Room	141	169
" Street Frontage	141	167
Theatres Existing Prior to This By-Law	140	166
Thickness, Minimum for Wood Beams	59	62
Timber, Quality of	19	13
Timber in Walls Prohibited	52	46
Timber Work, Bolts and Washers for	62	66
Time Limit for Permits	4	3
Trimmer Arches	64	67
Trimmer, Header and Tail (Wood) Beams	59	62
Trusses, Riveted, Steel and Wrought	125	150
" Steel and Wrought Iron for	124	149
" Steel and Iron Pin Connected	126	150
" Timber for	62	66

U

Under Treads Supporting Slate or Stone Steps	77	78
Uniforms for Officers of Building Department	154	207
Unit Stresses, Reinforced Concrete	110	122
Unloading, Shipping Vault Areas	164	234
Unsafe Buildings	149	201
Unsafe Cornices	92	92

V

	Sec.	Page
Various Fillings Between Floor Beams	107	116
Vault Areas, Shipping, Unloading	164	234
Vaults	55	61
Veneered Buildings	147	200
Ventilation and Lighting of Rooms	53	53
Vent Ducts in Public Schools	68	73
Vent Over Theatre Stage	141	172
Vent Shafts	48	44
Vent Shafts	53	57
Vertical Supports	129	154
Violations, Notices of	149	201
Violations, Notices of	151	203
Violations and Penalties	164	233

W

Walls—Adjoining	22	16
“ Adjoining, Reduced Thickness for	36	39
“ Bearing Defined	28	22
“ Bearing, with Openings	28	23
“ Clear Span Thickness	31	28
“	32	31
“ Curtain	37	39
“ Curtain in Skeleton Construction Buildings..	110	130
“ Existing Party	38	39
“ For Dwelling Houses	31	26
“ For Public Buildings	32	31
“ For Warehouses	32	29
“ Foundation	26	20
“ Furred	47	44
“ Hollow Brick on Inside of	45	43
“ Hollow	44	42
“ Increased Thickness for Excess Depth	34	36
“ Inclosing Steel Skeleton Structures	36	38
“ Lining Existing	39	39
“ Limiting Height for Single Thickness of... ..	35	37
“ Material of	27	22
“ Of Unfinished Buildings	40	40
“ Parapet	43	42
“ Partition	31	28
“ Partition (Brick), in Dwellings Exceeding Twenty-six Feet in Width	31	28
“ Partition on Girders and Columns in Ware- house Class	33	31
“ Reduced Thickness for Interior	34	37
“ Recesses for Alcoves	46	43
“ Recesses and Chases in	46	43
“ Rubble	39	40
“ Timbers to be Prohibited in	52	46
“ Tied, Anchored and Braced	41	40
“ To be Braced	41	41
Walls and Piers	28	22
Warehouse Class, Walls for	32	29
Water-Closet Accommodations	53	58
Water Pipes	90	89

	Sec.	Page
Web Stresses	110	124
Weights of Materials	134	158
Width of Buildings, Measurement of	7	8
Wind Pressure	139	164
Window, Metal Frames and Sash and Wired Glass...	105	110
Window Openings Enclosed	80	81
Windows, Bay, Oriel and Show	73	76
Windows in Rooms	53	53
Windows in Stair Hallways	53	55
Windows in Water-Closet Compartment and Bath-Rooms	53	54
Wired Glass and Metal Window Frames and Sash....	105	110
Wood Anchor Strips	60	64
Wood Beams	59	62
" " Bearings for	59	62
" " Bevel Ends	59	63
" " Calculate Safe Distributed Load	59	63
" " Cross Bridging for	59	63
" " Ends of, Not to Rest on Stud Partitions	59	63
" " Minimum Thickness for	59	62
" " Trimmer, Header and Tail	59	62
" " Near Flues	59	63
Wood Columns and Plates	61	65
Wood and Lumber Yards	158	209
Working Stresses	138	162
Wrought Columns	111	140
Wrought Iron	111	140
Wrought Iron	116	146
Wrought Iron	119	147
Wrought Iron Beams	116	146
Wrought Iron Beams	119	147

Y

Yard or Court Spaces	53	53
Yards	53	49

